communications

Security & Detection Systems
10 Commerce Way
Woburn, MA 01801
781-939-3800 Fax: 781-939-3996
www.l-3com.com

May 31, 2005

In reply refer to:
JG/L3SD/L1717

Department of Homeland Security
Customs & Border Protection
Office of Procurement – NP 1310
1300 Pennsylvania Avenue N.W.
Washington DC 20229

Attention: Mr. Terrence Lew, Contracting Officer

Subject: Solicitation Number HSBP1005R0376, Large Scale Non-Intrusive Inspection (NII) Imaging Systems, Firm Fixed Price Proposal, Submission Of

Enclosure: (1) Volume I – Technical Proposal
Volume II – Business Proposal

Gentlemen:

L-3 Communications Security and Detection Systems, Inc. (L-3 SDS) submits Enclosure (1) in response to the subject solicitation as its firm fixed price proposal for Large Scale Non-Intrusive Inspection (NII) Imaging Systems.

This proposal shall remain valid for of one hundred eighty (180) days from the proposal due date.

If you should have any questions concerning this matter, please contact the undersigned at telephone number (b) (6) fax number 781-939-3996 or email: (b) (6)

Very truly yours,
L-3 Communications Security
and Detection Systems, Inc.

(b) (6)
Director of Contracts

COPY

Technical Proposal (Volume 1)

Department of Homeland Security
Customs & Border Protection

Large Scale Non Intrusive Inspection (NII) Systems
HSBP1005R0376

Prepared By

L3 communications
Security & Detection Systems
Woburn, MA

Telephone: 781-939-3800

www.dsxray.com

PREFACE

Proprietary Information Notice

BUSINESS INFORMATION

Headquarters:
L-3 Communications Security & Detection Systems, Inc.
10 Commerce Way
Woburn, MA 01801 United States
Internet Address: http://www.dsxray.com
Telephone: (781) 938-7800
Fax: (781) 939-3996

Customer Support and Manufacturing
Americas

L-3 Communications Security & Detection Systems, Inc.
10E Commerce Way
Woburn, MA 01801 United States
Internet Address: http://www.dsxray.com
Telephone: 800-776-3031
Fax: 781-939-3996

L-3 Communications Security and Detection Systems, Inc.
2005 Gandy Blvd North
Suite 600, St. Petersburg, FL 33702 United States
Telephone: (800) 776-3031
Fax: (562) 594-8243

Asia Pacific

L-3 Communications Security & Detection Systems Pty Ltd
Unit C1 Lower Level
63-85 Turner Street
Port Melbourne
Australia 3207
Telephone: (03) 8645 4500
Fax: (03) 8645 4555

L-3 Communications Security & Detection Systems Limited (Hong Kong)
Rm 1409
Kodak House II
39 Healthy Street East
North Point
Hong Kong
Telephone: (852) 2590-0238
Fax: (852) 2590-0513

Europe and the Middle East
L-3 Communications Security & Detection Systems Limited (UK)
Astro House
Brants Bridge
Bracknell
Berkshire
United Kingdom
Telephone: 44 (0) 1344-477900
Fax: 44 (0) 1344-477901

TABLE OF CONTENTS

1 PROPOSAL SUMMARY 1-1

2 TECHNICAL APPROACH 2-1

2.1 HIGH DENSITY CARGO SYSTEMS 2-1
2.1.1 CX-3800G (Fixed) Gantry X-ray Inspection System 2-3
2.1.2 CX-3800M Mobile X-ray Inspection System 2-4
2.1.3 CX-6000R Rail X-ray Inspection System 2-5
2.2 ENGINEERING 2-6
2.2.1 Design 2-6
2.2.2 Integration 2-7
2.2.3 Technical Uncertainties 2-7
2.2.4 Software - User Interface – Cargo Analyst Workstation 2-7
2.3 RELIABILITY - OPERATIONAL READINESS 2-8
2.4 IMAGES SAMPLES 2-9

3 TEST RESULTS 3-1

3.1 L-3 TEST RESULTS FOR CX-3800M 3-2
3.2 PURPOSE 3-3
3.3 TEST LOCATIONS 3-3
3.4 IMAGING TEST OVERVIEW 3-3
3.5 TEST RESULTS 3-5
3.5.1 Maximum Penetration 3-5
3.5.2 Contrast 3-7
3.5.3 Detection of steel rings behind steel plates 3-8
3.5.4 Single Wire Resolution 3-9
3.5.5 Detection of thin material 3-10
3.5.6 Resolution 3-11

4 EXPERIENCE 4-1

4.1 L-3 BACKGROUND AND CAPABILITIES 4-1
4.2 CARGO EXPERIENCE – PROJECT SUMMARIES 4-8
4.2.1 Schiphol Netherlands – Dual View 9 MeV Project Summary 4-11
4.2.2 CX-3800M Project Summary 4-12
4.2.3 Saudi Imaging Systems Project Summary 4-15
4.2.4 CX-3800G Fixed Gantry Truck Scanner Project Summary 4-16
4.3 REFERENCES 4-19

5 PROJECT MANAGEMENT PLAN 5-1

6 QUALITY ASSURANCE PLAN 6-1

7 RELIABILITY PROJECTION REPORT 7-1

8 WARRANTY AND TRANSITION 8-1

9 APPENDIX – TMEC REPORT CX-3800M 9-4

LIST OF FIGURES

Figure 1. CX-3800G 2-3
Figure 2. Gantry Frame Layout 2-3
Figure 3. CX-3800G with building/shielding 2-3
Figure 4. CX-3800M 2-4
Figure 5. CX-6000R Rail Scanner 2-5
Figure 6. Detector Assembly 3800 2-6
Figure 7. Detector Electronics Module 2-6
Figure 8. Image Analyst Workstations 2-7
Figure 9. (b) (7)(E) 2-9
Figure 10 2-9
Figure 11. X-ray Image Aircraft Wing Components 2-9
Figure 12. Top View High Energy 2-9
Figure 13. Side View High Energy 2-9
Figure 14 (b) (7)(E) 2-9
Figure 15. (b) (7)(E) 2-9
Figure 16. Hidden Compartments 2-10
Figure 17. Cell Phones Hidden in Fuel Tank 2-10
Figure 18. High Energy Image Truck with Barrels 2-10
Figure 19. Automobile Rifle Hidden 2-10
Figure 20. Truck Load of Monitors 2-10
Figure 21. Handgun in Load of Monitors 2-10
Figure 22. L-3 Test Stand and Imaging Locations 3-3
Figure 23. Maximum Penetration Steel 3-4
Figure 24. Water Penetration 3-5
Figure 25. Contrast 3-6
Figure 26. Steel Rings Behind Steel Plate 3-7
Figure 27. Single Wire Resolution Air 3-8
Figure 28. Detection of Thin Material 3-9
Figure 29. Woburn, MA 4-5
Figure 30. Bracknell, UK 4-5
Figure 31. St. Petersberg, FL 4-5
Figure 32. Schiphol Scanner 4-11
Figure 33. Top View 4-11
Figure 34. Side View 4-12
Figure 35. CX-2500M Dutch Customs Truck 4-12
Figure 36. CX-2500M Image and (b) (7)(E) 4-13
Figure 37. CX-3800M US 4-14
Figure 38. CX-3800M EU 4-14
Figure 39. Two 9 MeV Scanners in Saudi Arabia 4-15
Figure 40. Image from Saudi 9 MeV 4-15
Figure 41. CX-450M in Singapore 4-17
Figure 42. CX-160V Autovan - Ford Chassis 4-18

1 Proposal Summary

The following Technical Proposal has been prepared by L-3 Communications Security and Detection Systems (SDS) Inc., in response to the Large Scale Non Intrusive Inspection (NII) System for the US Department of Homeland Security Customs & Border Protection (CBP) RFP HSBP1005R0376.

L-3 SDS is offering systems in the high density cargo category in fixed, mobile, and rail configurations in accordance with the requirements of the RFP. Each is based on proven technologies to provide excellent imaging quality.

The systems bid by L-3 include:

CLIN	L-3 OFFERING – SYSTEMS BID
CLIN 00050 Configuration 5 – Fixed System for High Density Cargoes	CX-3800G 3.8 MeV Gantry X-ray Inspection System
CLIN 00060 Configuration 6 – Mobile System for High Density Cargoes	CX-3800M 3.8 MeV Mobile X-ray Inspection System
CLIN 00080 Configuration 8 – Rail System for High Density Cargoes	CX-6000R 6.0 MeV Rail X-ray Inspection System

L-3 will provide the following documentation and updates to support the CLIN(s) bid.

DID	TITLE
A001	Project Management Plan
A002	Reliability Prediction Report
A003	Extreme Environment Maintenance
A004	Hazardous Materials List
A005	Equipment Installation Data Package
A006	Monthly Progress Report
A007	Operator Training
A008	System User's Manual
A009	Maintenance/Service Manual
A010	Vendor Technical Documentation
A011	Failure and Error Report
A012	Quality Assurance Plan
A013	Acceptance Test Plan
A014	Calibration Maintenance Requirement Report
A015	Radiological Survey Report
A016	Configuration List
A017	Technical Documentation Package

The L-3 SDS offer also includes the following CLINs corresponding to the high density cargo category (fixed, mobile, and rail cargo categories).

CLIN 00100	Operator Training Course Development
CLIN 00110	Operator Course Training Presentation
CLIN 00120	Train the Trainer Course Development
CLIN 00130	Train the Trainer Course Presentation
CLIN 00140	Technical Manuals
CLIN 00150	Maintenance and Technical Data Documentation

2 Technical Approach

2.1 High Density Cargo Systems

This section describes the L-3 approach to meeting the CBP requirements. Each of the systems proposed by L-3 SDS will be provided in conformance with the RFP HSDP1005R0376.

L-3 employs a common, consistent, and proven imaging systems design. Software architecture and key image construction is common across a broad spectrum of products, including baggage X-Ray systems and Cargo products. Consistency across the products is achieved by using common modules (including powerful imaging applications software) that can be used in different configurations to meet a variety of scanning requirements.

The Mobile and Gantry systems (CX-3800 M and G respectively) have identical X-ray imaging systems, i.e. X-Ray source, detectors, electronics and core software. The CX-6000R rail scanner has many common components with the CX-3800 M and G, and includes some modifications (such as higher energy source and larger detector size) to meet or exceed the high density cargo requirements.

The Mobile CX series began as a low energy system, and has evolved to a proven high energy design. Ten of the mobile systems are complete and delivered, including three high energy vehicles. Three more high energy systems will be delivered in the second quarter of 2005. Vast improvements have been made over the original design, resulting in a robust system that retains L-3s worldclass image quality, while improving platform hardware. A CX-3800M is available for demonstration at L-3 in Woburn, MA on an agreed upon time during the next 2 months. L-3 expects another 13 or more units to be ordered internationally this year.

The gantry system CX-38800 G) is designed for installation with minimal infrastructure. The images generated by the gantry systems will be nearly identical as that of the Mobile system, as the source and detectors, and resulting geometry are virtually identical. Seven of the CX-3800G (fixed) have been ordered, the first production unit is currently in shipment to the Middle East, with the remainder now in manufacturing. Depending on the CBP visit date, a CX-3800G may also be available for demonstration. If a complete unit is not assembled, a hardware platform will be available, and the imaging system can be represented by the Mobile system. L-3 anticipates another 10 – 20 of these units will be ordered overseas this calendar year.

The CX-6000R (rail) scanner is the result of an L-3 internally funded development program. As such, a complete system has not been assembled. The CX-6000R detector array, collimator, and electronics design were started by L-3 in November of 2004. A complete system is not yet available for demonstration, but the product is advanced enough for L-3 to accept orders.

L-3 offers integrated radiation/neutron detection with each of the systems. We are working with two vendors to ensure the equipment meets the latest ANSI requirements. The integrated equipment for the Gantry and Rail systems will not be ready for the time of demonstration as they are designed with permanent portals. L-3 can integrate with the Exploranium portals such as those currently deployed by Customs.

L-3 Performance and Requirements Matrix - Category 2 – High Density Cargoes

	Configuration 5 Fixed CX-3800G	Configuration 6 Mobile CX-3800M	Configuration 8 Rail CX-6000R
1. Resolution (Min distance detectable between 2 objects) Resolution #2 (Thin wire in air)	(b) (7)(E)		
2. Penetration of Steel Lead Target			
3. Contrast Sensitivity (Resolve a thin object behind steel plate) (Resolve wire behind steel plate)			
4. Throughput Scan Speed			
5. Image Quality	Highest	Highest	Highest
6 Built-in detection Neutron/Gamma	Will Comply	Will Comply	Will Comply
(b) (7)(E)			
Maximum Controlled Area	(b) (7)(E)		
Number of Operators			
Operational Environment			
Travel configuration	N/A	Comply	N/A
Radiation Dose Limit (averaged over scan cycle)	0.05 mR/hr personnel and those outside op area	0.05 mR/hr personnel and those outside op area	0.05 mR/hr personnel and those outside op area
Power Requirements	Comply	Comply	Comply
Operating Hours	Comply	Comply	Comply
Maximum Target Vehicle	N/A	Comply	N/A
Scan size/ Tunnel Size	Comply	Comply	Comply
Mounting Station for Panasonic toughbook	N/A	Comply	N/A
(b) (7)(E)	Comply	Comply	Comply

2.1.1 CX-3800G (Fixed) Gantry X-ray Inspection System

The CX-3800G offered in the fixed high energy category is a large-aperture X-ray system that obtains images using a standard X-ray configuration. The system is designed to scan any road legal US truck. The CX-3800G consists of a 3.8 MeV X-ray source, detector array, computer system and electronics, gantry and rails, operator cabin, and controls. The basic concept of operation is for the target cargo vehicle to be parked in the inspection tunnel and the X-ray source and the imaging system to be translated past the target cargo. The gantry creates a fan shaped beam of X-rays which are measured by an L-shaped array of X-ray detectors.

The standard CX-3800G configuration offered in this bid is an open system that has a small (b) (7)(E) (b) (7)(E). The following diagram Figure 1. CX-3800G shows a view of the system. Figure 2. Gantry Frame Layout shows the CX-3800G frame. If the length of the footprint can be increased, multiple trucks can be scanned in one pass.

The Gantry system is designed to be operated either inside a building or outdoors. A building may be preferable (more compact exclusion zone). L-3 will work with CBP on building design or provide a building at additional cost. See Figure 3. CX-3800G with building/shielding.

A flat concrete base of sufficient load bearing capacity is required for the gantry along with associated infrastructure (e.g. roads, security fencing, other offices and connections to utilities). Civil works and other associated infrastructure have not been included in the L-3 scope of work.

(b) (7)(E)

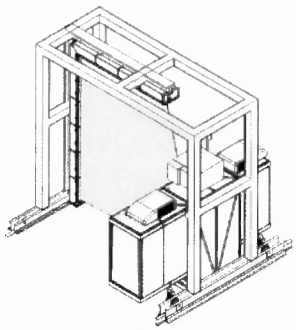


Figure 2. Gantry Frame Layout

(b) (7)(E)

2.1.2 CX-3800M Mobile X-ray Inspection System

The CX-3800M, shown in Figure 4. CX-3800M, provides the finest quality image available today in a mobile cargo X-ray inspection system. The CX-3800M is a large-aperture X-ray system that obtains transmission images using a standard X-ray configuration. The CX-3800M is fully self contained and includes the X-ray imaging system (3.8 MeV X-ray source, detector, computers, electronics) climate controlled operator cabin, boom and mast assembly, controls system, PTO electric generator, and truck chassis (different chassis options are available).

Figure 4. CX-3800M

The CX-3800M is driven past parked vehicles, trucks, or containers (forward or reverse) to obtain the X-ray imaging data. When deployed for scanning, the CX-3800M truck transmission is placed in neutral and an electronic drive motor engages the second rear axle directly to steadily move the whole system while emitting X-rays. The system operates at up to a(b) (7)(E) . The CX-3800M truck engine and power take-off (PTO) generator (mounted under the truck frame) provide all power necessary for full scanning capability. The system is able to operate from shore power for service and testing purposes.

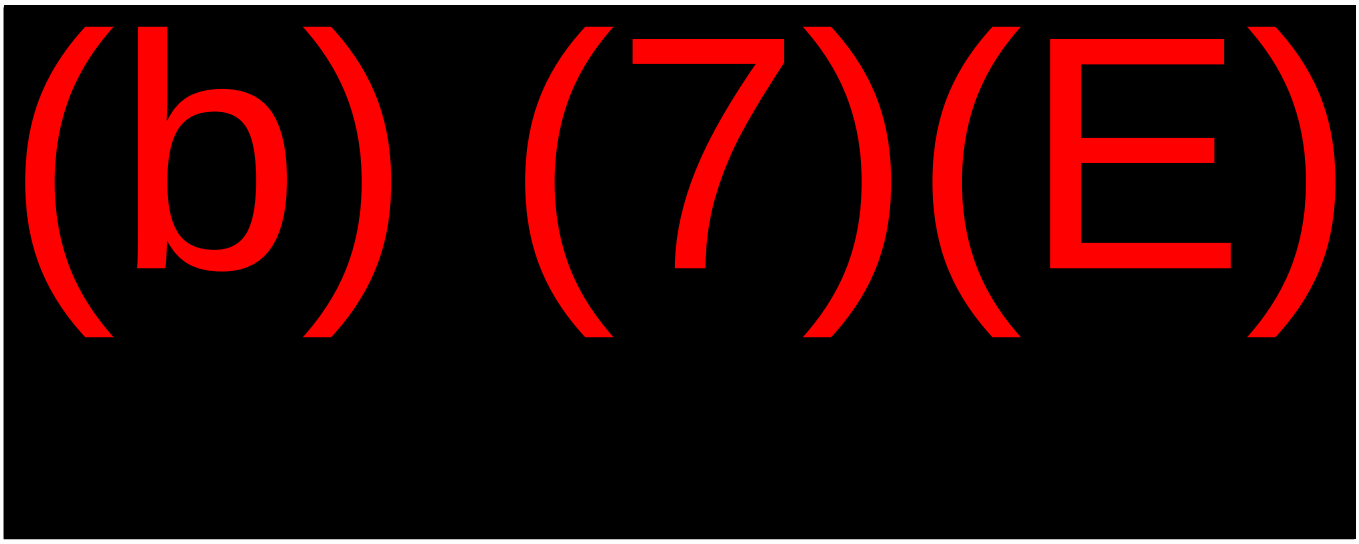
The CX-3800M represents the second generation of the L-3 high-energy mobile. The first generation mobile was delivered to Dutch Customs in November of 2002 and was the first 2.5 MeV road-legal mobile X-ray system available in the world. It was built to specific Dutch Customs requirements and has had an (b) (7)(E) Several improvements were incorporated into the "second generation design" of the L-3 high energy truck – the CX-3800M.

CX-3800M System Features

Rapid deployment in under 20 minutes. Collision avoidance system. Wireless Monitoring command and control for ground coordinator/driver/operator. Wireless perimeter fence for intrusion safety. Highly mobile road-legal chassis serviceable in locations worldwide (different chassis manufacturers and options can be provided). Electrical power created by using chassis engine and Power Take Off (PTO) generator. Simple rapid deployment, smooth operation, and easy maintenance. Electric drive scan motor (direct-to –axle). Ergonomic analyst area (with optional coffee maker, and refrigerator). Shore power plug-in (testing and maintenance). CCTV and wireless intercom.

2.1.3 CX-6000R Rail X-ray Inspection System

The L-3 rail scanner shown in Figure 5. CX-6000R Rail Scanner uses technology proven over years of operation of other L-3 cargo screening products. Images are produced in the same way as other L-3 cargo systems – that is using a linear array of scintillator detectors to measure the attenuation of a fan shaped beam of X-rays as they pass through the object being scanned.



The CX-6000R will have components on either side of the rail tracks, and minimal trenching underneath. On one side will be the detector tower and scatter shielding, the other the X-ray source and operator cabin. The detector tower houses the detector array and a substantial beam stop to attenuate radiation. The array consists of 30 detector modules, each oriented towards the source. At the base of the tower is a small equipment cabinet for the array power supplies and a data capture computer. A concrete wall will be required that runs the length of the operating area. The X-ray source is housed in a concrete cell that shields the radiation emitted by the linear accelerator source (Linac). A steel collimator in the side wall of the cell is used to form the X-rays emitted by the Linac into the required fan beam.

The operator cabin is located near the Linac cell. As well as space for the operators the cabin will house system electronics such as the Linac modulator, safety subsystem and data processing. If the cabin is inside the controlled operating area, it will require some shielding on the side facing the tracks. Access to the operating area will be cordoned by a chain link fence (or similar). Electrically controlled barriers will be used to prevent people accessing the controlled area along the railroad track that is not used during the scan.

Rail Scanner was designed for flexibility in installation. While the basic design includes the operators' cabin in the same facility as the X-ray source, the cabin may be separated if needed. The components required for this will be included in the installation specific requirements.

The CX-6000R rail scanner differs from the fixed and mobile requirements in two significant ways. The scan speed is over tens times faster and the object to be scanned is much larger. To compensate for the changes, the source to detector distance increases, and the systems uses larger detectors and a higher energy source.

2.2 Engineering

2.2.1 Design

The X-ray sources used in the L-3 high energy systems are (b) (4) units from (b) (4) - the market leader for the supply of high-energy X-ray devices for non-destructive testing. Using (b) (4) reliable linear accelerator technology to provide a range of X-ray energies and dose rates, the (b) (4) provides the extensive performance range essential to managing complex real-time radioscopy processes.The CX-3800(G and M) use the (b) (4) and the CX-6000R uses the (b) (4) operated at 3.8MeV and 6.0 MeV respectively. Each is fitted with the Ultra Low Leakage head.L-3 modifies the output of the Linac before it reaches the scan tunnel. A filter is used to flatten the beam so the entire array sees a uniform signal and to strip some of the lower energy spectrum. This reduces the dose to the cargo and the amount of scatter. The beam is then collimated into a narrow fan beam that is aligned with the detector array.

The detector array consists of a series of Cadmium Tungstate ($CdWO_4$) scintillator crystals (see Figure 6. Detector Assembly 3800). Each is coupled to a photodiode that converts the intensity of detected X-rays to an electrical signal. These signals are then converted in sequence to digital data (Figure 7. Detector Electronics Module), which is collected into a line of data before being transmitted to the data processing system. This process occurs every time the Linac generates a pulse of X-rays. The system can be programmed to sample and sum as many pulses as required without any hardware changes. The detector electronics used to measure the analog signals from each of the photodiodes, convert them to a digital signal and extract them from the array. The Host Computer communicates with the system controller and Data Capture PC to coordinate the creation of images. Data from the array is fed directly into a proprietary PCI board. From that point until the inspector sees the image the data is handled using commercially available PC hardware and peripherals. This ensures both a reliable solution and long term serviceability. One or more display stations can be connected to the system (two are proposed). (b) (7)(E)

(b) (4)

The L-3 controls systems utilize a PLC and software oriented design approach that significantly reduces wiring and hardware in the controls system. Controls system user interface is provided through touch screen panels with access to system monitoring control and diagnostics functions.

The radiological safety systems are designed so operators are exposed to no more than 0.1 mR/hr at any time *during* a scan (i.e. while the source is on) and less than 0.05 mR averaged over the scan cycle. Assuming a working year of 2000 hours, the annual dose will be less than 100 mR.

There are both visual and audible warnings generated whenever the source is switched on. The visual warning is a flashing red lamps that are clearly visible in daylight. A continuous warning is sounded for 10 seconds before the source can radiate.

The CX-3800M includes automatic collision avoidance system that senses a truck or container being scanned has been positioned incorrectly or that it is oversized. Wireless monitoring command and control remotes for the CX-3800M ensures ground coordinators, driver and X-ray operator are kept in constant communication. These remotes can be used to communicate ready status, and instantly cease truck motion and the production of X-rays.

Emergency Stops and Safety Interlocks are provided. Safety stops will be located at suitable locations around the system; pressing any one of these will inhibit the X-ray source. Doors to radiation controlled areas will be interlocked so that the source cannot radiate unless closed.

(b) (4)

2.2.3 Technical Uncertainties

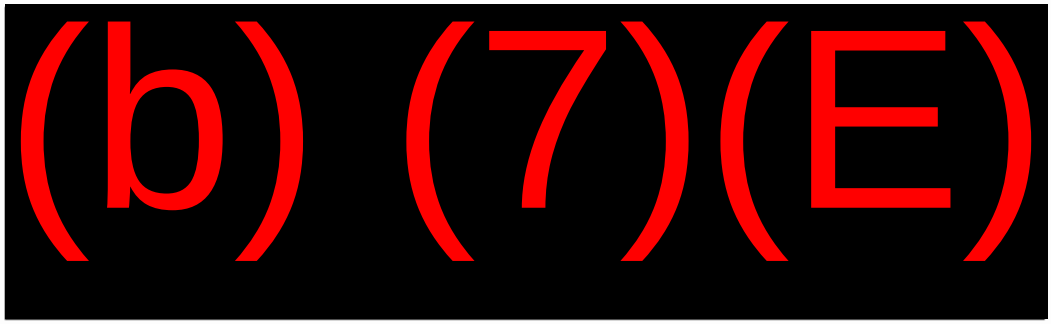
There are no technical uncertainties in the systems that L-3 SDS has bid in this proposal.

2.2.4 Software - User Interface – Cargo Analyst Workstation

Operating System Software: Microsoft Windows®. Applications Software: L-3 Cargo Analyst Workstation Software, custom coded in C++ including proprietary image processing and presentation. There are two workstations as shown in Figure 8. Image Analyst Workstations located in the operator room.

Figure 8. Image Analyst Workstations

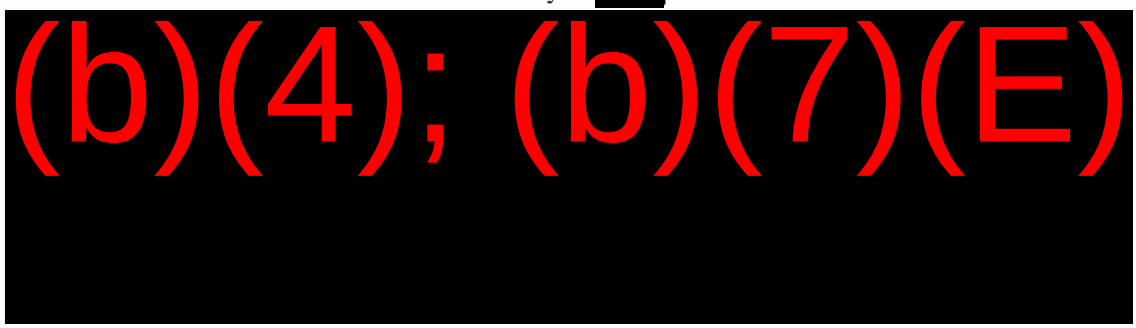
Once presented with an X-ray image, the following functions are available to the image analyst:



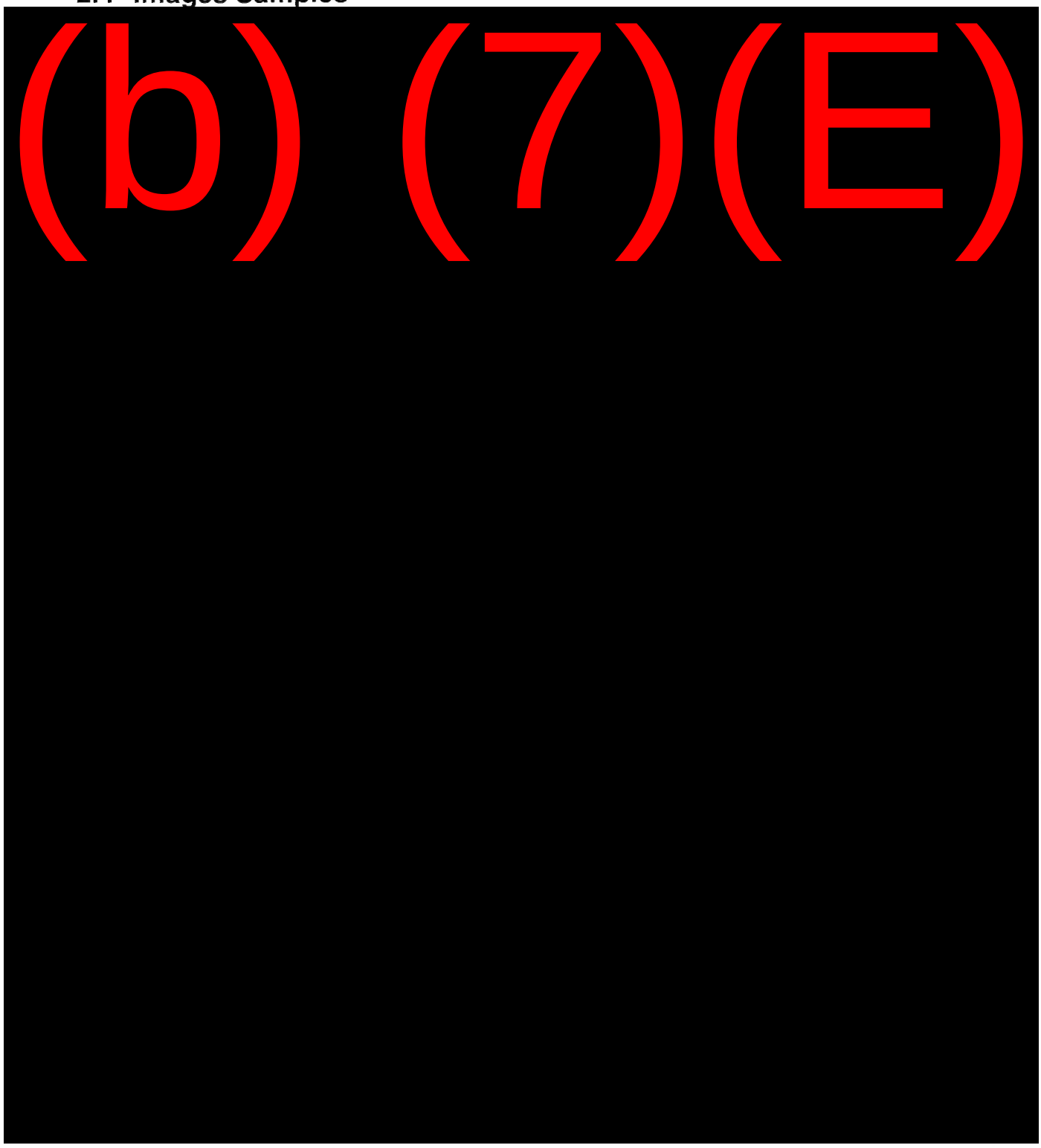
2.3 Reliability - Operational Readiness

The L-3 cargo products have been developed using a systems engineering approach resulting in high availability and ease of maintenance. The operational readiness of the first L-3 high energy truck CX-2500M Dutch truck in operation since November 2002 is (b)(4); (b)(7)(E).

Given the rapid evolution of the system design, and the relative short operational history of the current configurations, there is not enough field logistics data for these exact designs to make statistically accurate projections. L-3 has estimated readiness figures based on performance of similar systems, the complexity of design, and the deviation from established systems. It is expected that the CX-6000R will be the most reliable, followed by the CX-3800G, and then the CX-3800M. The operational availability of the 3800M should be comparable to the Dutch truck. Using a conservative approach, L-3 would predict operational readiness for all three systems using the system with the lowest predicted reliability, the Mobile system. It is estimated that the CX-series will have an overall availability of (b)(4); (b)(7)(E).



2.4 Images Samples



(b) (7)(E)

communications

Security & Detection Systems
10 Commerce Way
Woburn, MA 01801
781-939-3800 Fax: 781-939-3996
www.l-3com.com

May 31, 2005

Department of Homeland Security
Customs & Border Protection
Office of Procurement – NP 1310
1300 Pennsylvania Avenue N.W.
Washington DC 20229

Attention: Mr. Terrence Lew, Contracting Officer

Subject: Solicitation Number HSBP1005R0376, Section L – Paragraph L.2.1 Product Test Results

CERTIFICATION

In accordance with the Section L, Paragraph L.2.1, L-3 Communications Security and Detection Systems, Inc. (L-3 SDS) hereby certifies that this section of the proposal includes Product Test Results of its own testing on the proposed Large Scale Non-Intrusive Inspection (NII) Imaging Systems.

Very truly yours,
L-3 Communications Security
and Detection Systems, Inc.

(b) (6)

Vice President, Cargo Product Line

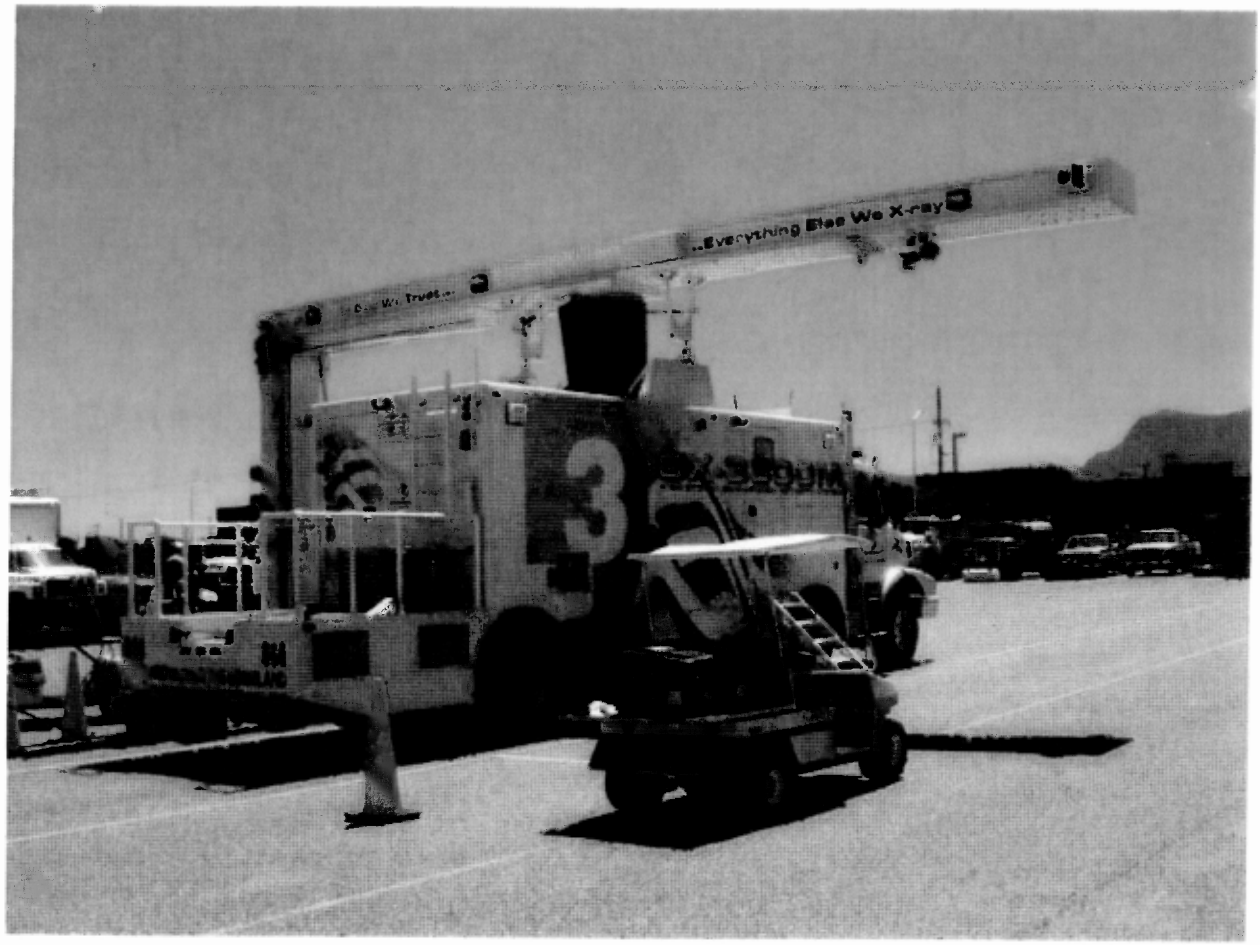
3 Test Results

L-3 is providing two sets of test data to support the CX-3800M and also the CX-3800G (the same imaging systems as the M). The first set of data is included in this section and was produced by L-3 during several rounds of testing at different times.

The other set of test data is in the form of an independent report from the Department of the Army titled "Evaluation of the L-3 Communications CX-3800M Mobile Cargo X-ray System" produced by Thunder Mountain Evaluation Center, Fort Huachuca, Arizona, in October 2004.

The TMEC Report is an Attachment.

3.1 L-3 Test Results for CX-3800M



3.2 Purpose

The performance test is to demonstrate the Imaging performance of the CX-3800M Mobile X-ray System.

3.3 Test Locations

Three different tests were conducted using the CX-3800M US.

1. L-3 Facility, Reading MA. Test Conducted for the Irish Customs Service. July 2004. [Test 1]

2. Thunder Mountain Evaluation Center, Fort Huachuca, AZ. (see Detailed Report under sep. cover) September 2004 [Test 2]

3. L-3 Facility, Reading MA. Test Conducted for the Government of Sri Lanka. March 2004 [Test 3]

3.4 Imaging test overview

This testing involves the image aspects of penetration, contrast, ring and wire identification, thin material, and resolution. All tests were performed at the slowest scan speed.

2.1 Maximum penetration
Test the visibility of a lead block behind 220mm, 250mm, 260mm and 270mm steel.
Test the visibility of a lead block behind 1500mm of water.

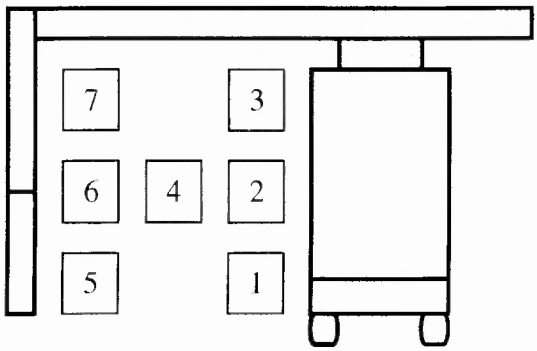
2.2 Contrast
Test visibility of 2mm, 3mm and 4mm steel plate behind a 100mm steel plate.

2.3 Detection of steel rings behind steel plates
Test visibility of steel rings made of 4mm, 5mm and 6mm wire behind a 100mm thick steel plate.

2.4 Single Wire Resolution
Test visibility of 1mm, 1.2mm and 1.4mm steel wire (250mm long).

2.5 Detection of thin material
Test visibility of 0.2mm, 0.3mm and 0.4mm thick steel plates.

2.6 Resolution
Test visibility of 4mm grids (2mm thick, 4mm width and 4mm spacing).



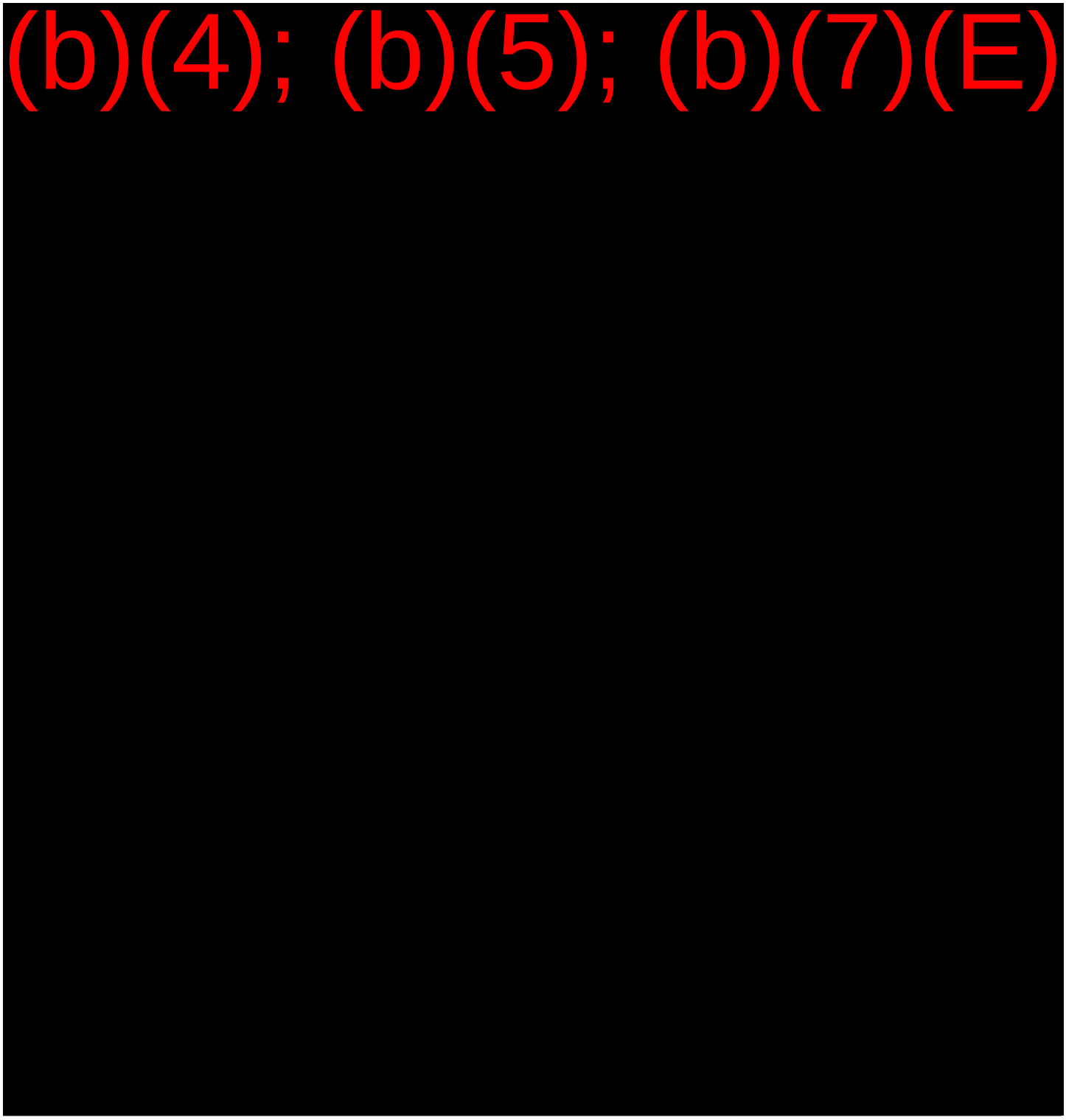
Imaging Locations viewed from the end of the inspection area. The tests are executed with the object in different areas of the X-ray inspection tunnel.

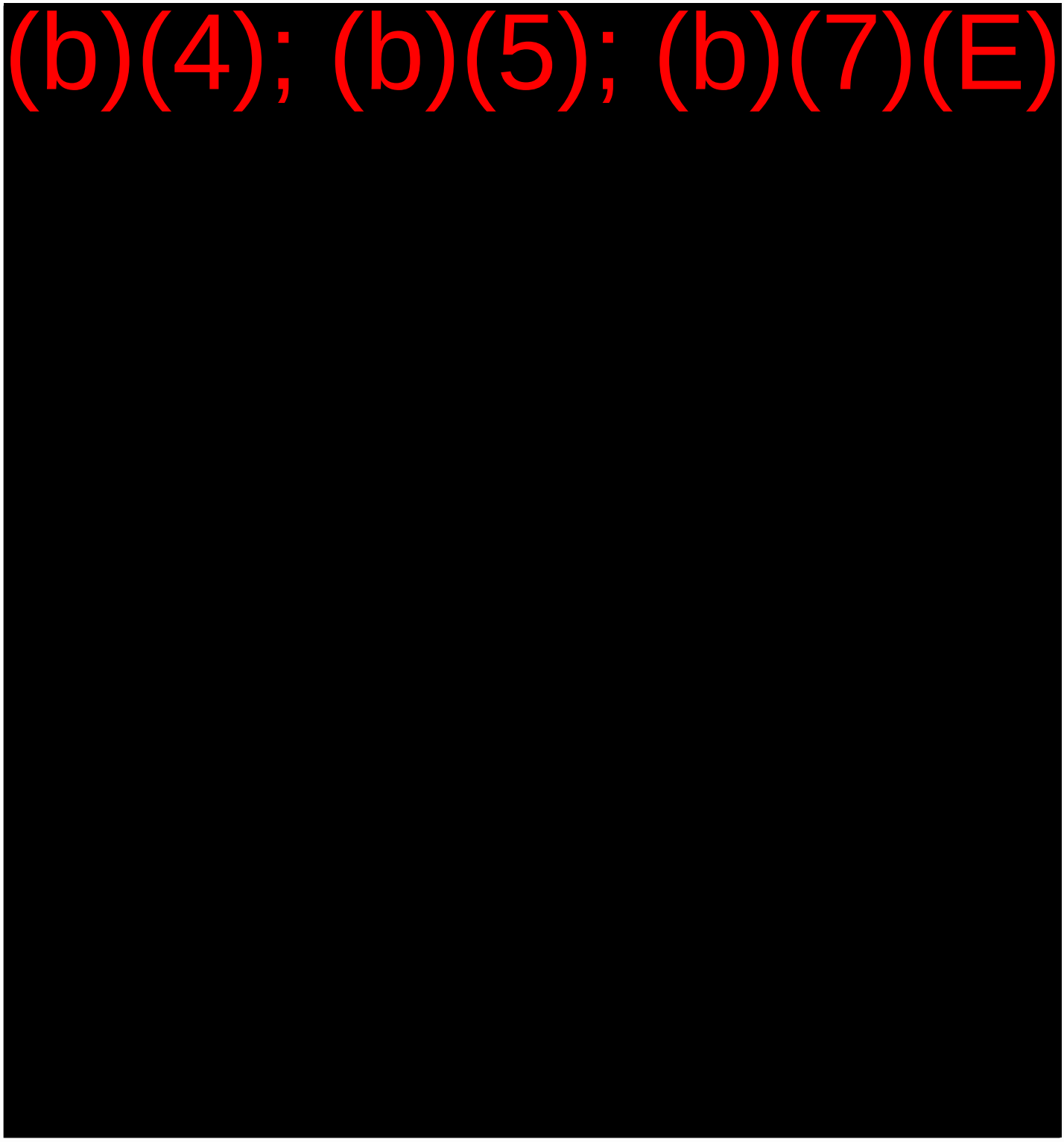
Figure 22. L-3 Test Stand and Imaging Locations

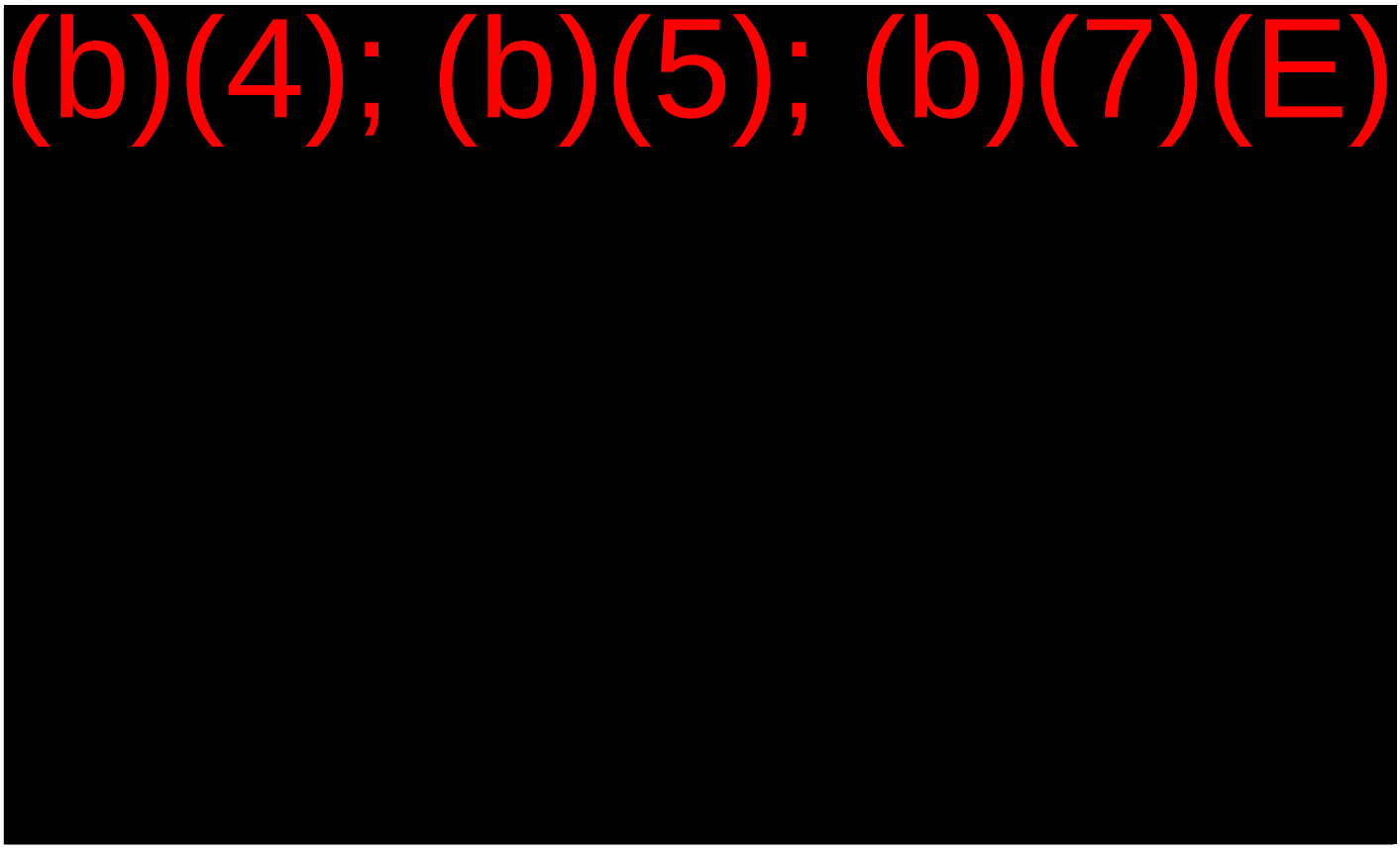
Test Stand

3.5 Test Results

The following are bitmap(b) (7)(E) from the cargo analyst workstation.







4 Experience

4.1 L-3 Background and Capabilities

L-3 Communications
L-3 Communications Corporation, headquartered in New York City, New York, was formed from ten business units derived from Lockheed Martin and Loral in 1997. Since that time L-3 has shown substantial growth, is a publicly traded FORTUNE 500 company (NYSE symbol: LLL), had revenues over $6.8 billion USD in 2004, and has more than 75 divisions with over 44,200 employees worldwide.

L-3 is the largest merchant supplier of defense electronics in the industry and a growing provider of commercial communications and transportation products. L-3 products rank either number one or number two in their niche market segments. Key product areas include secure communications, ocean products, simulation and training, aviation recorders, displays and antenna products, aviation communications and surveillance systems, telemetry and instrumentation, space and navigation systems, microwave and wireless products and security and detection systems.

For the future, the company will continue its strategy to remain ahead of technological developments by using our substantial Research and Development resources to produce new products and acquire leading products that enhance the L-3's offerings to customers.

L-3's products and services are divided into five sectors:

Secure Communications and Intelligence, Surveillance and Reconnaissance

- Provides U.S. military platforms with secure data links for real-time information collection and dissemination, fleet management, support for signals intelligence and ISR special mission aircraft, airborne surveillance systems, and strategic and tactical signals intelligence systems.

Training, Simulation and Support Services

- Develops and manages simulation and training programs for domestic and international governments, focused on education, logistics, strategic planning, organizational design, and other activities that increase combat skills and conserve costs.
- Products include trainers for specific air platforms, missions and weapon tactics, and ballistic missile targets.

Aviation Products and Aircraft Modernization

- Supplies a broad range of products for military and commercial aviation markets, including flat-panel LCD displays, cockpit, voice and event recorders, and traffic and terrain avoidance technology.
- Provides engineering, modification, maintenance, logistics and upgrades for U.S. Special Operations Command aircraft, vehicles and personal equipment.

- Offers turnkey aviation life cycle management services for military and commercial wide-body and rotary wing aircraft.

Specialized Products

- *Aviation Security* – Transportation Security Administration (TSA)-certified X-ray screening systems for checked, carry-on and oversized baggage, as well as systems used to screen break bulk cargo and air freight, and provide port and border security.
- *Homeland Security* - Provides technology, products and services supporting airport security, cargo inspection, port and maritime security, mobile command and control systems, sensors, intrusion detection, border patrol, and crisis management.
- *Ocean Products* - Mine hunting, dipping sonars and anti-submarine warfare products, naval power distribution, conditioning, switching, and protection equipment.
- *Aviation Products* - Ultra-wide frequency antennas, rotary joints and radomes used in military aircraft, weather radar and air traffic control systems.
- *Airborne, Ground and Space Telemetry* – Supports military flight testing for a variety of platforms and is a leader in navigation products, gyroscopes and controlled moment devices for commercial, military and other applications.
- *Electronics* – Global Positioning System (GPS) technology, electro-mechanical safety and arming devices (ESADs), and proximity fuzes currently in use on multiple aircraft, missile and smart munitions platforms.
- *Electrical Power Systems* - State-of-the-art power propulsion systems for commuter railroads and power switches for Web-based businesses needing protection from power disruption.
- *Commercial Communications* – Provides a variety of products to the commercial and space communications industries, including: transponders, payloads, uplinks, downlinks, wireless instrument test products, remote sensing Internet networks, microwave links and products for RF safety and microwave base stations.

L-3 Communications Security and Detection Systems, Inc.

L-3 Communications Security and Detection Systems (SDS), Inc. is a wholly owned subsidiary of L-3 Communications Corporation. L-3 SDS has demonstrated expertise in the manufacture and installation of X-ray scanning systems. With more than 18,000 systems in operation worldwide, we are the world's leading supplier of screening solutions - offering a broad array of products to the aviation, transportation, and public building security markets. Our systems are used to screen for explosives, firearms, contraband, and drugs in the vast majority of all commercial airports, jails, postal facilities, and government buildings worldwide.

L-3 SDS offers a wide variety of products specifically designed to meet the on going requirements of the aviation industry with product offerings for checkpoint passenger

screening, advanced explosives detection systems (AEDS), certified EDS and cargo imaging. Our product range includes:

Checkpoint X-ray

- Ideal for use in high-volume checkpoint processing, Linescan and PX series screening solutions provide operators with (b) (7)(E) With a complete line of checkpoint x-ray screening solutions including walk-through and hand held metal detectors, L-3's systems are engineered to meet the requirements of high traffic, large throughput locations. Our hand-carry X-ray screening systems are equipped with (b) (7)(E) software features such as (b) (7)(E) capabilities to assist the operator in their screening efforts.

(b) (7)(E) Explosive Detection Systems

- VIS and MVT (b) (7)(E) systems provide high throughput, in-line (b) (7)(E) screening of checked baggage for a wide range of explosives and other contraband. As part of L-3's (b) (7)(E) product line, the VIS108 offers (b)(4); (b)(6) with the industry's highest (b) (7)(E) detection throughput of (b) (7)(E) The VIS product line has a proven track record for ease of integration into airports' existing conveyor system and outstanding reliability.

  The VDS108 offers the same explosive detection capabilities as the VIS108, but is optimized for freestanding and out-of-gauge applications. L-3 recently started shipments of its next generation (b) (7)(E) product, the MultiView Tomography (MVT) system. By using three fixed X-ray views, the MVT is able to better discriminate (b) (7)(E) resulting in better detection with lower false alarm rates. The MVT is the only non-CT system to date to meet the explosive detection requirements for TSA certification, but at a false alarm that exceeds certification requirements.

TSA and/or DfT Certified Explosives Detection Systems (EDS)

- The eXaminer 3DX® 6000 is a CT-based technology certified to meet the stringent Transportation Security Administration's (TSA) aviation (b) (7)(E) baggage screening requirements in U.S. airports. Requiring minimal floor space and standard electrical power, the eXaminer 3DX™ 6000 is designed for installation in a baggage room as a fully integrated inline system (with deployed throughputs exceeding (b) (7)(E)) or in a lobby for stand-alone operation. L-3 also offers two additional TSA certified systems, the eXaminer 3DX™ 1000 and the VCT30 as lower cost alternatives.

Cargo X-ray Imaging Solutions

- Cargo screening solutions include a wide range of air cargo pallet screeners as well as mobile systems, gantry systems and fixed-site installations with energy levels up to 9 MeV that meet the demanding needs of customs, border control and maritime port security throughout the world. Outside of the airport's baggage handling system – L-3 has designed x-ray screening inspection systems for cargo, container and vehicle inspection with the capacity to image the contents of a fully loaded (b) (7)(E) cargo container. L-3 also offers smaller more portable systems that can be towed or that are built into a vehicle. Systems range in size, throughput capacity, and optional accessories while still providing the highest level of imaging and detection available.

In addition to L-3's broad product offering, SDS offers integration and project management capabilities that differentiate us from our competitors—working with customers to identify their operational and security needs to come up with the most cost-effective solution for them. With hold baggage screening (HBS) systems installed in over 125 major airports throughout the world and having well over 30 years experience in the manufacture and design of X-ray systems, 12 years experience in systems integration and project management, L-3 SDS provides the most comprehensive and complete screening solutions available on the market today.

L-3 SDS maintains manufacturing and/or engineering facilities in three locations. The headquarters facility is located in Woburn, Massachusetts USA and is the engineering and manufacturing location for all (b) (7)(E) and large cargo systems. Conventional system engineering and manufacturing as well as advanced computed tomography (eXaminer 3DX 6000) systems are manufactured in the Saint Petersburg, The Bracknell facility, located in Bracknell, England, also produces conventional and cargo systems. L-3 SDS has over 200,000 square feet of facilities dedicated to manufacturing, engineering, research and development, and administration. The tables below show the personnel devoted to administrative, engineering and manufacturing capabilities and facilities to accommodate them.

L-3 SDS Personnel:

Personnel	United States			Asia Pacific	United Kingdom	Total
Function	**Florida**	**California**	**Massachusetts**			
Customer Service	246	18	28	57	44	393
Engineering	86	-	119	-	-	205
Administration	42	-	85	15	37	179
Operations	144	-	12	-	6	162
Total Personnel	**518**	**18**	**244**	**72**	**87**	**939**

L-3 Security and Detection Systems facilities are located as shown in Figure 29. Woburn, MA, Figure 30. Bracknell, UK, and Figure 31. St. Petersberg, FL.

L-3 SDS Facilities:

Location	Manufacturing	Administration Engineering	Totals
Woburn, MA	22,000	58,000	80,000
St. Petersburg, FL	70,400	58,600	129,000
Bracknell, UK	7,500	7,500	15,000
Total Square Footage	**99900**	**124,100**	**224,000**

Figure 29. Woburn, MA

Figure 30. Bracknell, UK

Figure 31. St. Petersberg, FL

Manufacturing Capability
L-3 SDS is ISO 9001:2000 registered company for the development, manufacture and support of advanced explosives and contraband detection systems and fully embraces the ISO 9000 management methodology. Our experience in project management extends from defect-free product manufacturing to need and cost-benefit analysis, site surveys, and on-time delivery.

Customer Service
Our field service team, the largest in the industry today, provides uninterrupted equipment maintenance 24 hours a day, 7 days a week. Security & Detection Systems is the leading supplier of high-performance X-ray inspection and detection systems serving the security market.

Our hands-on training courses are staffed by instructors who not only know our systems, but also the daily routines of X-ray screening. Their familiarity with airports, shipping ports, warehouses, security checkpoints and other large facilities enables our trainers to prepare new operators, repair technicians and staff for the real-world requirements of system operation and maintenance. Training is offered at all L-3 manufacturing sites.

On-site Installation and Maintenance Services

- Customer Support Services operates throughout the United States and in 80 countries world wide
- Our expertly trained Field Service Engineers provide installation services for each machine you purchase… single or multiple locations.
- Our site survey planning services include: site planning and design; unit configuration; traffic patterns; and throughput considerations.
- Field Service Engineers provide equipment maintenance 24-hours a day, 7 days a week. There are no delays in service delivery.
- Worldwide parts depots ensure that parts are always available, from the smallest screw to a complete X-ray system.

Factory and On-Site Training Programs
Hands-on training courses developed by our instructors familiarize your operators, repair technicians, and staff with system operation and maintenance. Course topics include:

- Manufacturing facility tour
- X-ray theory and safety
- Safety devices
- Operating procedures, menus and options
- Image recognition
- Radiation survey methods
- Operator Assist, Image Archiving, and Threat Image Projection
- Troubleshooting, component replacement

- Preventive Maintenance
- Repair Procedures
- Hands-on lab exercises and testing

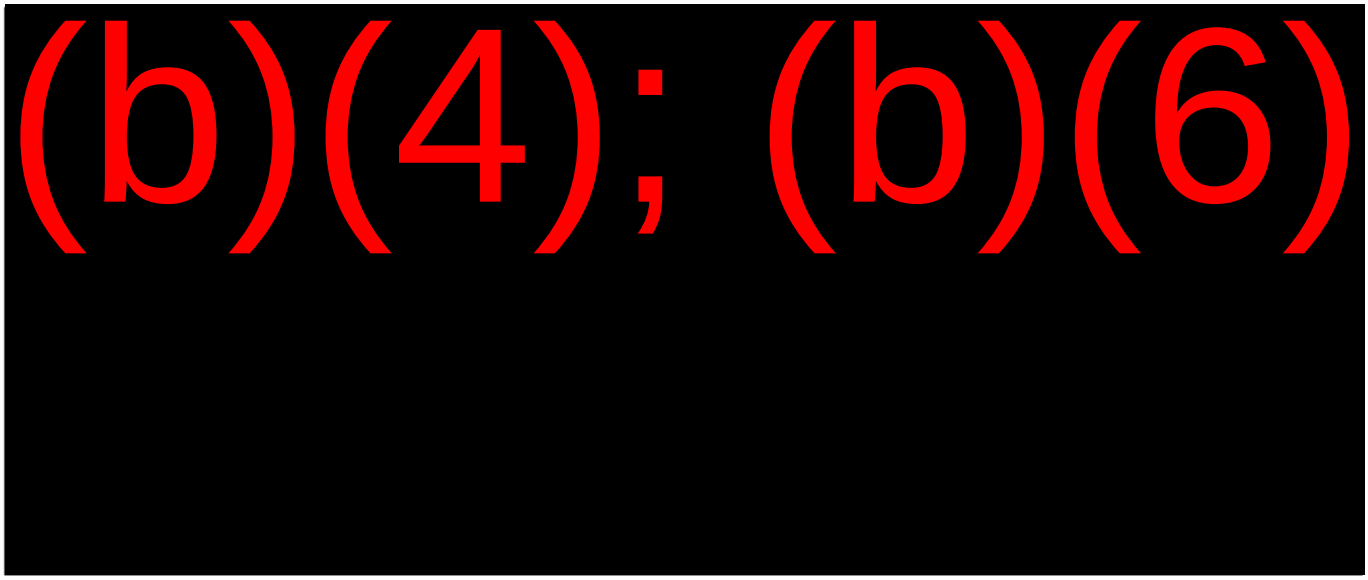
In addition, L-3 offers optional extended warranties, annual equipment maintenance, preventive maintenance inspection agreements, and radiation surveys

L-3 SDS offers standard annual equipment maintenance agreements for X-ray and metal detection systems that include support for emergency repairs, annual radiation surveys, general preventive maintenance, and administrative record keeping. Annual preventive maintenance inspection agreements include visual and mechanical, operational safety, electronic and radiation safety checks.

Organization
The organization chart below shows the executive organization of L-3 SDS.

L-3 COMMUNICATIONS SECURITY AND DETECTION SYSTEMS

EXECUTIVE ORGANIZATION



4.2 Cargo Experience – Project Summaries

Cargo Qualifications
L-3 SDS is qualified for the supply and installation of cargo scanning equipment because of:

- Pre-eminent quality of our X-ray imaging systems
- Appropriate skills, qualifications and experience. L-3 Communications Security and Detection Systems - the world's leading supplier of X-ray security screening systems.
- The resources at our disposal are second to none, guaranteeing outstanding product and responsive service.
- Our technical expertise comes from long term experience in the X-ray inspection and cargo business.

Cargo X-ray inspection systems range in size, throughput capacity, and optional accessories. L-3 offers a complete line of cargo screening solutions in several system categories while still providing the highest level of imaging and detection available to the market. Some of these cargo systems are large enough to image the contents of fully loaded (b) (7)(E) as well as (b) (7)(E) Other applications are: small trucks, cars, aircraft ULDs, palletized cargoes, and oversized packages. Locations for L-3 cargo products include: border crossings, maritime ports, airports, force protection areas, prisons, and other high security locations. L-3 has significant experience in cargo X-ray systems including more than 7 separate high-energy fixed site installations.

Completed High Energy Systems
L-3 has completed (3) of the CX-3800M systems, (1) CX-2500M (predecessor to the CX-3800G), (9) of the CX-450M mobile systems and (7) high energy X-ray imaging systems that use a functionally similar imaging system design. For each of the (2) high energy x-ray inspection sites at Schiphol Airport, there are two x-ray imaging systems.

The number of L-3 cargo container/truck inspection systems completed is 22.

(2) CX-450P dual view cargo pallet systems were deployed also in 2004.

(76) of the L-3 CX-160V mobile systems have been completed to date.

L-3 has recently taken (3) orders for the CX-3800M, (6) orders for the CX-3800G A number of other orders are pending immediate booking by L-3. Both systems are in full production.

Listing of Completed and Ordered Cargo Systems

High Energy Mobile Cargo Systems

2002	Dutch Customs	1	Completed
2004	EU Country (customer info is private)	2	Completed
2004	United States Version	1	Completed
2004	Dutch Customs	1	Ordered
2004	Polish Customs	1	Ordered
2004	Puerto Rico Customs	1	Ordered

3.8 MeV Gantry Cargo Systems

2005	Saudi Arabia	1	Completed
2004	Saudi Arabia t	5	Ordered

9 MeV Fixed High Energy Systems

2000	Dutch Customs, Schiphol Amsterdam	2	Completed
2003	Saudi Arabia Customs (Delivered in 2004)	5	Completed
2004	Dubai Customs	1	Ordered

450 KeV CX-450M Mobile Cargo Systems

1999	US Customs	1	Completed
2000	Saudi Arabia Royal Guard	1	Completed
2000	US Army	2	Completed
2001	Singapore	1	Completed
2004	Puerto Rico	1	Completed
2004	Gambia	1	Completed
2004	Loaner Unit (operating in Poland)	1	Completed
2004	Loaner Unit	1	Completed

450KeV CX450P Cargo Pallet systems

1999	Air France (Charles de Gaule)	3	Completed
2000	Korean Air	2	Completed
2004	Australia Customs	2	Completed

CX-160V Mobile Autovans

Year	Customer	Country	Quantity
2004	Puerto Rico Customs	Puerto Rico	5
2004	Viet Nam Customs	Viet Nam	4
2001/2/3	UK Customs	UK	20
2002	FAAN	Nigeria	1
2001	UK Customs	UK	8
2000	UK Customs	UK	9
2000	Romanian Customs	Romania	2
2000	Dubai Customs	UAE	2

2000	Nice Airport	France	1
1999	Min of InteriorItaly		11
1999	Dubai Customs	UAE	1
1997	S.Africa Customs	S.Africa	8
1996	Emiriguard	UAE	4
		TOTAL	76 Completed

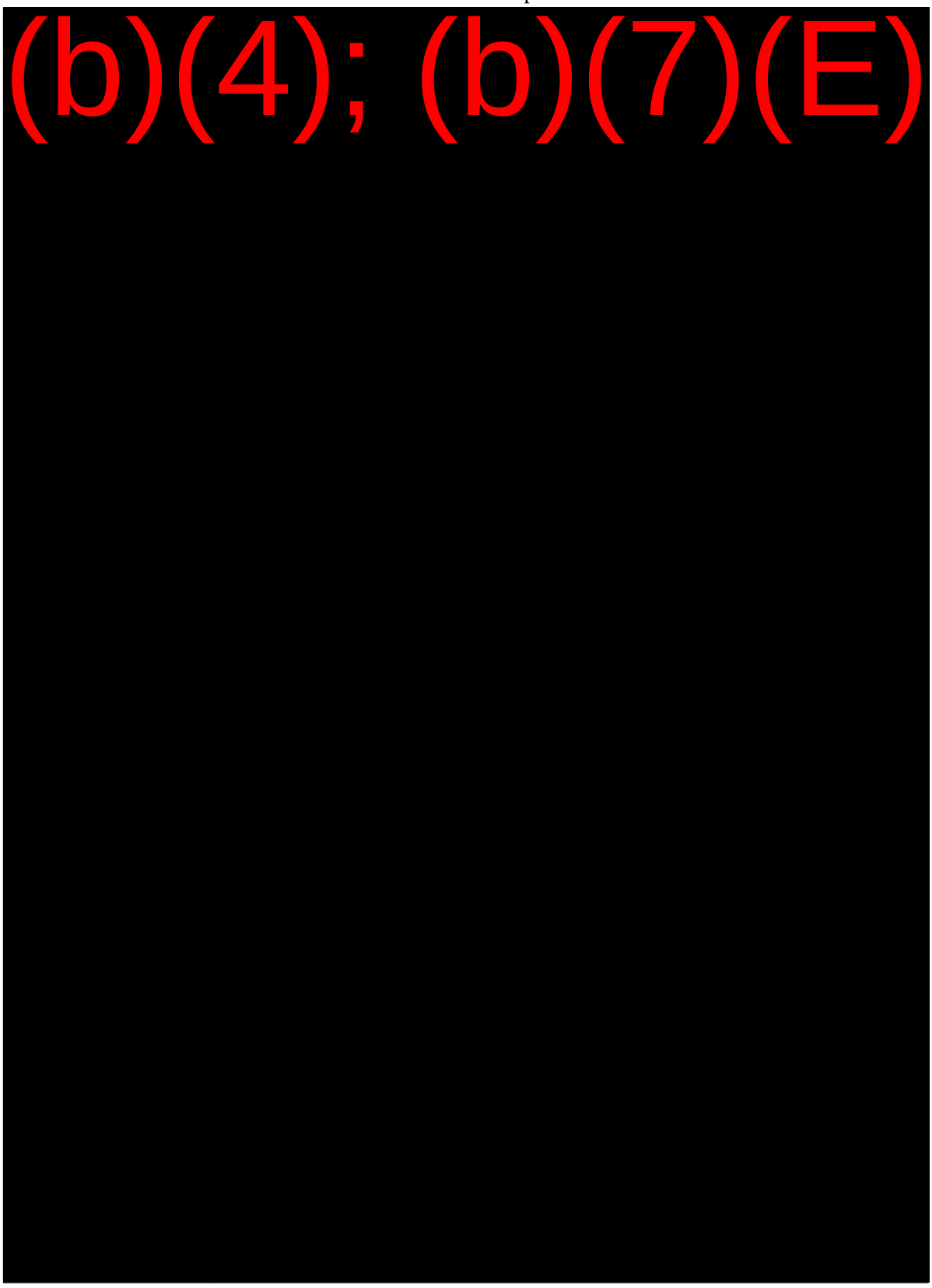
(b)(4); (b)(7)(E)

(b)(4); (b)(7)(E)

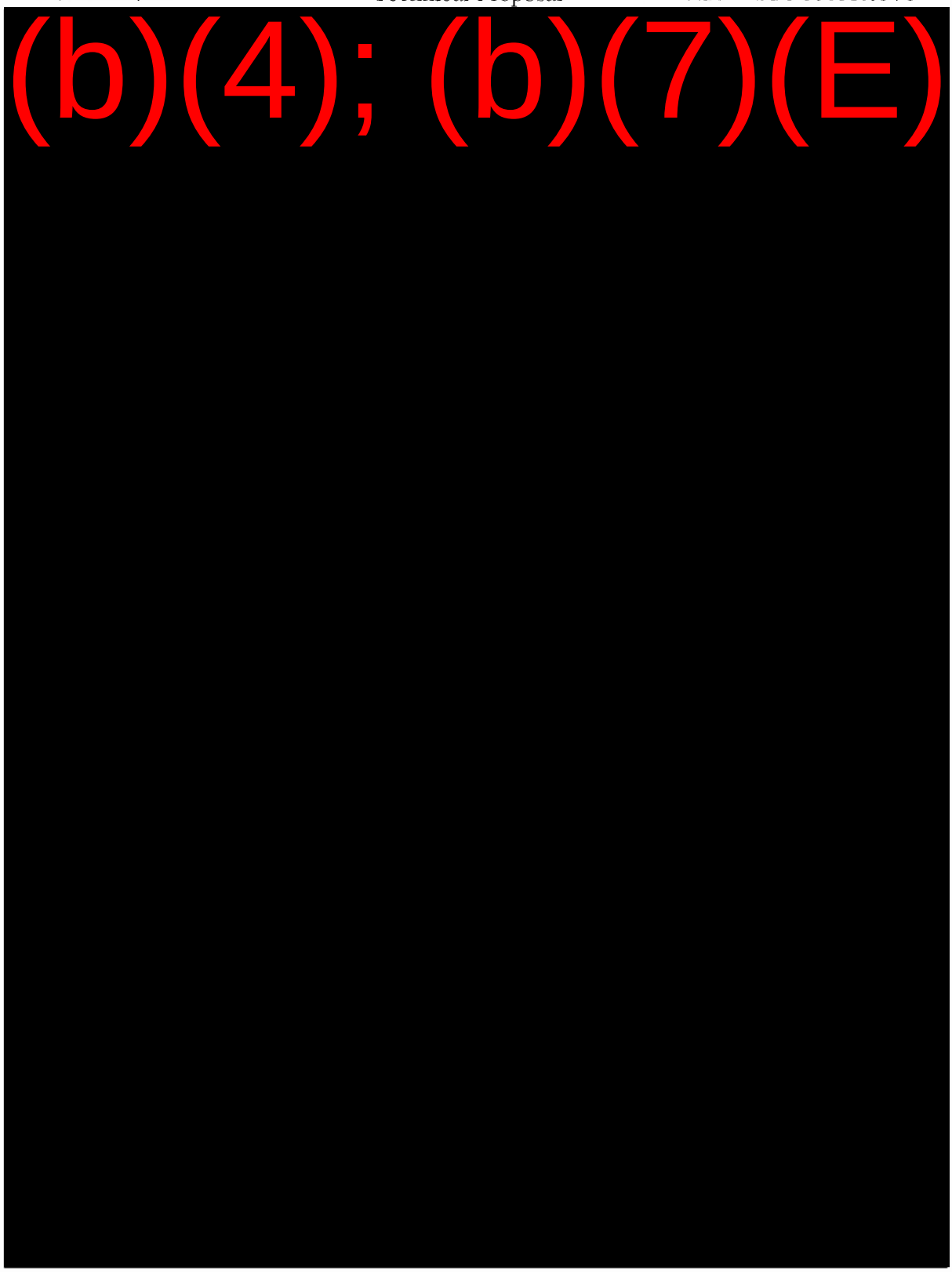
4.2.3 Saudi Imaging Systems Project Summary

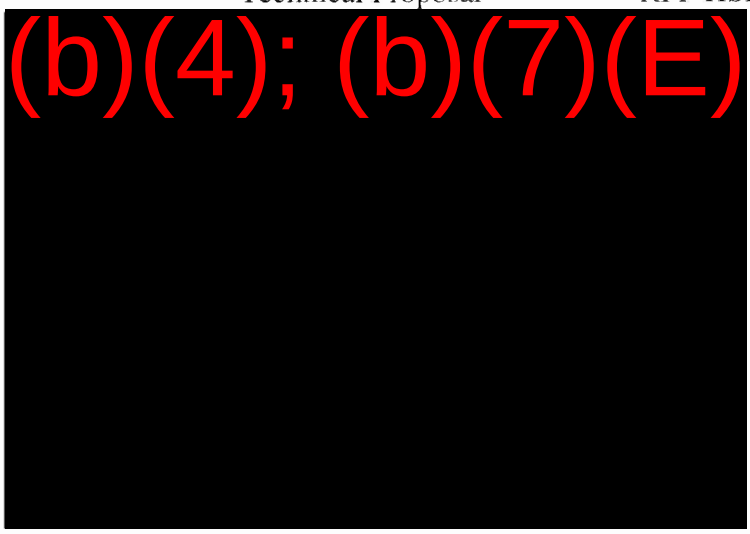
(b)(4); (b)(7)(E)

(b)(4); (b)(7)(E)



(b)(4); (b)(7)(E)





4.3 References

Reference 1 and 2

PRME OFFEROR NAME
L-3 Communications Security and Detection Systems, Inc

COMPANY TO BE EVALUATED
L-3 Communications Security and Detection Systems, Inc

CONTRACT NUMBER

CONTRACTOR NAME ADDRESS
L-3 Communications Security & Detection Systems, Inc.
10 Commerce Way
Woburn, MA 01801 United States

TYPE OF CONTRACT
Fixed price

METHOD OF PROCUREMENT
Negotiated

COMPLEXITY OF WORK
High

DESCRIPTION OF WORK

(2) x 6-9 MevDual View Machine (2 imaging systems each)

1 x 2.5 MeV Mobile Scanner

LOCATION OF WORK
Port of Rotterdam, Schiphol Airport, Netherlands

CONTRACT PERIOD OF PERFORMANCE
2001 thru 2002

CONTRACT AMOUNT
Private

CONTRACT STATUS
Complete

CONTRACTING OFFICER

Reference persons and their Position (b) (6), Head of Dutch Customs Scanner Projects
Contact information
Tel (b) (6)
Fax +31 10 2904985
e-mail (b) (6)

Reference 3

PRME OFFEROR NAME
L-3 Communications Security and Detection Systems, Inc

COMPANY TO BE EVALUATED
L-3 Communications Security and Detection Systems, Inc

CONTRACT NUMBER

CONTRACTOR NAME ADDRESS
L-3 Communications Security & Detection Systems, Inc.
10 Commerce Way
Woburn, MA 01801 United States

TYPE OF CONTRACT
Fixed price

METHOD OF PROCUREMENT
Negotiated

COMPLEXITY OF WORK
High

DESCRIPTION OF WORK

(5) x 9 MeV High throughput Cargo Scanners

LOCATION OF WORK
Saudi Arabia

CONTRACT PERIOD OF PERFORMANCE
2003 thru 2005

CONTRACT AMOUNT
Private

CONTRACT STATUS
Complete

CONTRACTING OFFICER

EG&G Middle East
Name of port Jeddah /Dammam
Contact Person (b) (6)
Tel (b) (6) Fax 00 966 146 00033

5 Project Management Plan

1. Introduction

1.1. Background

The L-3 CX-3800G is a re-locatable gantry style cargo inspection system providing fine image quality and penetration. The CX-3800 is very flexible, capable of cargo Xray inspection of trucks, ISO intermodal shipping containers, vans, automobiles, and any size ULD air cargo container.

1.2. Program Objectives

The overall objective of this program is to procure, integrate and validate a CX-3800G Gantry System, shipping it to a domestic location of the CBP within 150 days of contract award. Please see section 2 for breakdown of roles and responsibilities.

The program plan is broken down into the following tasks:

A Procurement and of the long lead items

- A.1 Procurement of a (b) (4) **Linac** X-ray emitter
- A.2 Procurement of the gantry crane and drive system from subcontractor – (b) (4) [redacted]
- A.3 Procurement of Containment Box from fabrication house
- A.4 Procurement of Wireless Fence Kit
- A.5 Procurement of Radiation Detection equipment (if required)

B Production of sub-assemblies (All sub-assemblies to be built at L3's Henschel facility in Newburyport Massachusetts)

- B.1 Containment Box electronics
  - B.1.1 Procurement of bill materials
  - B.1.2 Assembly
  - B.1.3 Test per released test plan
  - B.1.4 Quality Validation
- B.2 Ground and Shelter Electronics Kit
  - B.2.1 Procurement of bill materials
  - B.2.2 Assembly
  - B.2.3 Test per released test plan
  - B.2.4 Quality Validation
- B.3 Detector Box Assembly
  - B.3.1 Procurement of bill materials
  - B.3.2 Assembly
  - B.3.3 Test per released test plan
  - B.3.4 Quality Validation

C Integration of containment box components

- C.1.1 Installation of (b) (4) **Linac** (3.8 MeV)

C.1.2 Installation of Containment box electronic subassemblies

C.1.3 Complete system wiring and interconnections.

C.1.4 Tests per released test plan

C.1.5 Quality Validation

D **Product Validation:**

D.1 Performance of a Factory Acceptance Test at L3's Henschel Facility

D.2 Validation Test performed at the L-3 facility

E Pre-Installation

E.1 Licensed Civil Engineer to provide site analysis and verification

E.2 Creation of site-specific drawing package

E.2.1 Including input from civil engineering assessment

E.3 Perform due-diligence on local contractors (if applicable)

F **Shipping**:

F.1 Secure proper shipping documentation:

F.1.1 Commercial Invoice

F.1.2 End User Statement and Export License (if required).

F.2 Ensure proper crating and packaging of system components.

F.3 Arrange over the road vehicle Transport from L3 to destination identified by CBP.

G **Installation**:

G.1 Manage civil work activities (if applicable)

G.2 Perform civil works verification visit.

G.3 Installation of CX-3800G

G.3.1 Installation of Gantry Crane and Drive System

G.3.2 Installation of Containment Box

G.3.3 Installation of Detector Boxes

G.3.4 Installation of Shelter and Ground Electronics

G.3.5 Paint touch-up and system cleaning

G.4 Perform system validation to ensure proper system performance (Burn-in)

G.5 Perform Site Acceptance Testing

G.6 Provide Operator Training

2. Project Roles and Responsibilities

This program is of importance to the overall strategic plan of the Cargo product line. Project roles, responsibilities, and accountabilities will be clearly and specifically defined and managed. The following defines the roles/responsibilities of the L3 portion of the program.

Program Owner – The Cargo Office

Project Manager [PM] - the Project Manager will be the primary point of contact on this program. As such, the Project Manager will have full control over all aspects of this program. (b)(4); (b)(6) will serve as Project Manager for this project.

(b)(4); (b)(6)

2.1. Project Manager Role/Responsibilities

- The Project Manager is the primary interface with the L-3 S&DS team. All directions related to cost, schedule, scope of work are the responsibility of the Program Manager.
- The Project Manager is primary interface with all subcontractors. Any subcontractor direction related to cost, schedule, and the scope of work are the responsibility of the Program Manager.
- The Project Manager will develop schedule of program critical milestones
- The Project Manager will coordinate pre-kickoff planning efforts with functional groups

- The Project Manager will coordinate development of detailed program plan with functional groups
- The Project Manager will maintain Customer contact and hold periodic Customer reviews throughout the program.
- The Project Manager will oversee approval of system and sub-system specifications
- The Project Manager will maintain Program cost/schedule/performance management

2.2. Operations Role/Responsibilities

- The Operations Lead will coordinate the procurement, assembly and test of required L-3 components based on the design and specifications developed by Engineering. The Operations Lead for this project will be (b)(4); (b)(6).
- Operations will procure, assemble and test CXM Detector boxes.
- Operations will drive creation of any required L-3 assemblies (aka "make parts")
- Operations will assign accountable owners for relevant WBS elements

2.3. Engineering Role/Responsibilities

- Engineering will provide a technical lead / Project Engineering support to coordinate engineering efforts per program plan and to act as "owner" of all Engineering deliverables. The Engineering Lead for this project is (b)(4); (b)(6).
- The Engineering Lead, working with the Project Manager, will be responsible for the overall technical oversight for Wolf Coach
- The Engineering Lead will oversee the development of labor and material cost estimates (and supporting basis of estimates) to WBS in support of the program plan/project approval documentation.
- Document, build and test the PLC Panel Interface Box.
- Document, build and test Equipment Rack #1.
- Engineering will be responsible for the document control release of all design documentation, drawings and part specifications.
- Develop subsystem specifications (as required) needed to meet the product requirements.
- Assign engineering resources to perform scope of work and deliverables for engineering tasks.
- Assign accountable owners for relevant WBS elements

2.4. QA Role/Responsibilities

- QA will provide a QA lead to coordinate validation efforts per program plan and to act as "owner" of all QA deliverables. The QA lead for this project is (b)(4); (b)(6).
- QA is responsible for the development of a QA Plan and subsequent PSQA test procedure
- QA is responsible for the Identification and shipping of Test articles
- QA will perform PSQA testing and assist with FAT validation
- QA will generate Engineering Anomaly Reports for any issue identified and will track all items deemed critical by the Program Team to closure.

2.5. Service Role/Responsibilities

- The Service Group will provide a lead to coordinate engineering efforts per program plan and to act as "owner" of all Service deliverables. The Service Lead for this project is (b)(4); (b)(6)
- The Service Group is responsible for the generation of a localized Service plan.
- The Service Group will assist in the performance of a Site Survey.
- The Service Group will provide an FRU spares list.
- The Service Group will order adequate spare parts to support the installation.
- The Service Group will support the creation of Operator and Maintenance Manuals.
- The Service Group will assist with the Installation and provide operator training.

2.6. Installation Role/Responsibilities

- Installation team will perform all duties to install the CX-3800G in the field as outlined in the program schedule. The "owner" of the installation activities is (b)(4); (b)(6)
- Installation group will provide management over local contractors (if applicable).
- Installation team to ensure all tools are onsite to perform work as required.
- Installation team will perform all duties to install the CX-3800G in the field as outlined in the program schedule.
- Installation team will provide support through QA testing

2.7. Customer Roles/Responsibilities

- US Customs and Boarder Patrol (CBP) is responsible for choosing the installation site of the CX-3800G system.
- CBP is responsible for providing a program interface through the completion of the program.
- CBP is responsible for identifying acceptable training dates for end users.
- CBP is responsible for review and approval at key milestones.

3. Work Breakdown Structure

The effort can be broken down into 5 significant parts as listed below:

1.0 Program Management: Provide overall program management

2.0 Component Procurement: This WBS element consists of all activities required to purchase, inspect and deliver to L3 Henschel of all required components as identified and documented by Engineering. This WBS will be performed by Operations.

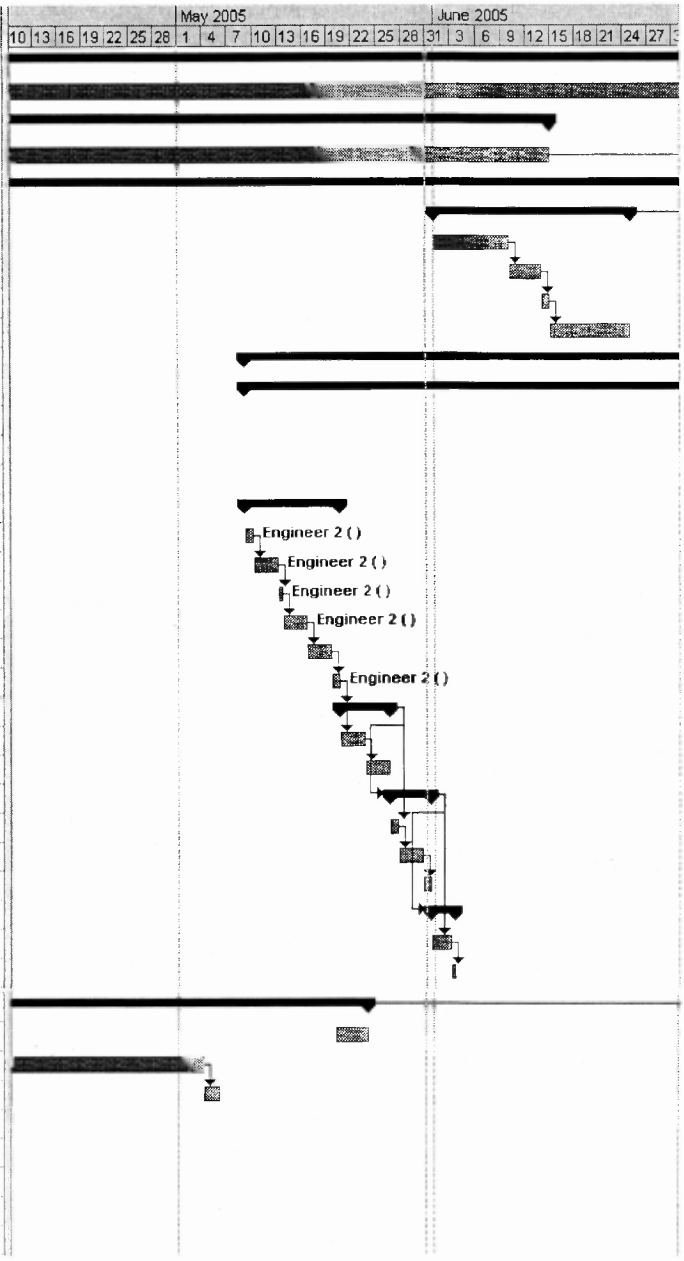
3.0 Sub-assembly Production: This WBS element consists of all activities related to the assembly of the system sub-components, loading of software and PLC codes.

4.0 Build Kit Assembly and Validation: This WBS element consists of the tasks required to assemble the build kit, verify kit compliance to documentation, sub-component labeling, and packaging. This WBS element consists of all activities required to deliver the CX-3800G. This WBS will be performed jointly by the Program Office, (b) (4) and L-3 Florida Ops

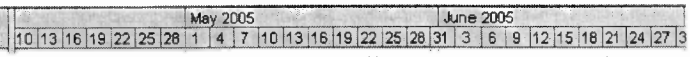
5.0 Installation, Validation and Training: This WBS element is to provide a successful installation, as well as system burn in time and validation. This WBS element also includes training to the end users. This WBS will be performed by Customer Service with Assistance from the Program Office, (b) (4) and Engineering.

4. Program Milestones

	Task Name	Duration
1	**Gantry Unit (U.S. Customs and Boarder Protection)**	**119 days**
2	1.0 Program Management	119 days
3	**2.0 Component Procurement**	**50 days**
4	Purchase Bill of Materials	10 wks
5	**3.0 Sub-Assembly Production**	**75 days**
6	**NAI Production**	**18 days**
7	Erect system	7 days
8	Testing	2 days
9	QA Buy off	1 day
10	Unit disassembly and paint	8 days
11	**L-3 Production**	**52 days**
12	**Assembly**	**52 days**
13	**Detector Boxes**	**6 days**
14	Assemble CXDA Detector boxes	40 hrs
15	CXDA Detector Box testing	8 hrs
16	**Assemble C-Box**	**9.5 days**
17	PLC Panel	1 day
18	DAS Power Supply	3 days
19	DAS Computer	4 hrs
20	Interconnect Panel	8 hrs
21	Sub-assembly integration	3 days
22	Testing - Power-up	1 day
23	**Assemble PDP Gantry**	**4 days**
24	Build-up Din rail	1 day
25	Assy PLC components and Panel	3 days
26	**Assemble Ground Electronics**	**3 days**
27	Build and load software	1 day
28	Assemble Rack	1 day
29	Test	8 hrs
30	**Assemble Operators Console**	**3 days**
31	Build and Program	2.5 days
32	Testing	4 hrs
33	**Containment Box**	**34 days**
34	Install Linac	2 days
35	Build time	4 wks
36	Ship to System Integration	2 days
37	**4.0 Build Kit Assembly and Validation**	**27 days**
38	**Build Kit**	**7 days**
39	Assemble and Label	7 days
40	Pack and crate - outside vendor	3 days
41	Ship	7 days



	Task Name	Duration
42	- **5.0 Installtion, Validation, & Testing**	**16.63 days**
43	- **Installation**	**16.63 days**
44	Inventory Shipment	4 hrs
45	Gantry Erection (Day 1)	16 hrs
46	Gantry Erection (Day 2)	24 hrs
47	- **Installation of Control Center**	**2.75 days**
48	Installation of system computers	6 hrs
49	cabling	8 hrs
50	Software	4 hrs
51	Control Panel	4 hrs
52	- **Installation of the Containment Box**	**10.13 days**
53	Install Containment Box	3 hrs
54	Install L3 Sub-assemblies	1 wk
55	Install Linac	6 hrs
56	Cabling	8 hrs
57	Linac Alignment	3 days
58	- **Installation Of Module Boxes**	**7.13 days**
59	Mount Modules to Gantry	8 hrs
60	Align Modules with Linac	8 hrs
61	- **System Clean-up**	**16.63 days**
62	Paint Touch-up	8 hrs
63	Cabling tie-up	8 hrs
64	Peripherals	8 hrs
65	Float	2 days
66	Burn in	5 days
67	QA - FAT	5 days
68	Red Book	1 day
69	Operators Training (Customer)	5 days



5. Management

5.1. Communication of Schedule and Task Changes

Status reports will be issued. Program Reviews are held at critical milestones. WBS element meetings are held weekly. Major program issues are communicated to the VP's for assistance as appropriate.

5.2. Program Charge Numbers

Charge numbers to be determined at start of Program

Revision History

REV.	ECO #	Appr.	DESCRIPTION OF CHANGE	DATE
1.0	RCM		Original	5/23/05

This document was generated using template: 8201-10052-00 Rev B0

1. Introduction

1.1. Background

L-3 S&DS has an opportunity to increase its' domestic install base. U.S. Customs and Border Protection (CBP) has shown interest in a high energy X-ray screening solution. A CX-M has been offered as a solution, with the possibility of additional sales when the CX-M is accepted.

1.2. Program Objectives

The overall objective of this program is to procure, integrate and validate a CX-M truck, shipping it to a domestic location of the CBP within 8 months of contract award. After production is ramped-up, 120 day delivery of follow-on CX-M orders is expected.

The following tasks have been identified make this possible:

A Procurement and Integration of an appropriate Vehicle:

- A.1 Procurement of a **Freightliner** chassis
- A.2 Chassis modification
  - A.2.1 Installation of Dual Idler Axles,
  - A.2.2 Hydraulic Drive System,
  - A.2.3 PTO Generator,
  - A.2.4 Surface Mount Air Conditioning Units.
- A.3 Integration of the following components:
  - A.3.1 Cab Kit
  - A.3.2 OPS Room Kit (including the System Control Kit)
  - A.3.3 Boom Kit
  - A.3.4 Truck Exterior Kit
  - A.3.5 Equipment Room Kit (including the Motion Control Kit)
  - A.3.6 System Control Kit
  - A.3.7 (b) (4) Linac (3.8MeV) Kit
  - A.3.8 Wireless Fence
- A.4 Balance Vehicle based on new X-ray components
- A.5 Integration and Factory Acceptance Test
  - A.5.1 Validation of Vehicle Dimensions per US DOT Requirements
  - A.5.2 Validation of Weight and Axle Loading Requirements per US Road Regulations
  - A.5.3 Validation of Coachwork delivered functionality

B Procurement and Installation of an **Equipment Room Kit** including an ESTOP Assembly, an Electronics Rack, a DAS Computer, Host Computer, Workstation Computer and a **Motion Control Kit** including a Scan Drive Assembly, and a Mast Kit.

C Procurement and Installation of a **Linac Source**.

D Procurement and Installation of a **Wireless Fence kit**.

E Procurement and Installation of a **Truck Exterior Kit**.

F Procurement and Installation of a **Boom Kit** including a Boom Interface Box, Collision Avoidance System, Detector Boxes, and a Boom Drive Panel.

G Procurement and Installation of a **Ops Room Kit** including a Front Cabin Interface Assembly, an Electronics Rack Assembly-2, an ESTOP Assembly, a KVM Extender Assembly , and a **System Control Kit** including a PLC Panel Assembly, Rear Cabin Interface, and a Power Distribution Assembly

H Procurement and Installation of a **Cab Kit**.

I Procurement, assembly and test of **CXM Detector Boxes.**

J Procurement, inspection, assembly and test of the **PLC Panel Interface Box**

K Procurement, inspection, assembly and test of **Equipment Rack #1**.

L **Product Validation**:

- L.1 Performance of a Factory Acceptance Test at Wolf Coach
- L.2 Integration Test performed at the L-3 facility
- L.3 Validation Test performed at the L-3 facility
- L.4 Outgoing Inspection (PSQA) performed at the L-3 facility
- L.5 Factory Acceptance Test (if required) with the Customer performed at the L-3 facility
- L.6 Site Acceptance Test (if required)

M **Shipping (if required)**:

- M.1 Secure proper shipping documentation:
  - M.1.1 Commercial Invoice
  - M.1.2 Vehicle Title
- M.2 Record, via digital photographs, basic views of the exterior and interior of the vehicle.
- M.3 Ensure all externally accessible egress and equipment is locked and secure.
- M.4 Arrange over the road vehicle Transport from Woburn to desired domestic location.

N **Installation**:

- N.1 Perform a Site Survey and assessment
- N.2 Create a spare parts and FRU list
- N.3 Provide Operator Training

2. Project Roles and Responsibilities

This program is of importance to the overall strategic plan of the Cargo product line. Project roles, responsibilities, and accountabilities will be clearly and specifically defined and managed. The following defines the roles/responsibilities of the L3 portion of the program.

Program Owner – The Cargo Office

Project Manager [PM] - the Project Manager will be the primary point of contact on this program. As such, the Project Manager will have full control over all aspects of this program. (b)(4); (b)(6) will serve as Project Manager for this project.

(b)(4); (b)(6)

2.1. Project Manager Role/Responsibilities

- The Project Manager is the primary interface with the L-3 S&DS team. All directions related to cost, schedule, scope of work are the responsibility of the Program Manager.
- The Project Manager is primary interface with Wolf Coach. Any Wolf Coach direction related to cost, schedule, and the scope of work are the responsibility of the Program Manager.
- The Project Manager will develop schedule of program critical milestones
- The Project Manager will coordinate pre-kickoff planning efforts with functional groups
- The Project Manager will coordinate development of detailed program plan with functional groups
- The Project Manager will maintain Customer contact and hold periodic Customer reviews throughout the program.
- The Project Manager will oversee approval of system and sub-system specifications
- The Project Manager will maintain Program cost/schedule/performance management

2.2. Operations Role/Responsibilities

- The Operations Lead will coordinate the procurement, assembly and test of required L-3 components based on the design and specifications developed by Engineering. The Operations Lead for this project will be (b)(4); (b)(6).
- Operations will procure, assemble and test CXM Detector boxes.
- Operations will drive creation of any required L-3 assemblies (aka "make parts")
- Operations will assign accountable owners for relevant WBS elements

2.3. Engineering Role/Responsibilities

- Engineering will provide a technical lead / Project Engineering support to coordinate engineering efforts per program plan and to act as "owner" of all Engineering deliverables. The Engineering Lead for this project is (b)(4); (b)(6).
- The Engineering Lead, working with the Project Manager, will be responsible for the overall technical oversight for Wolf Coach
- The Engineering Lead will oversee the development of labor and material cost estimates (and supporting basis of estimates) to WBS in support of the program plan/project approval documentation.
- Document, build and test the PLC Panel Interface Box.
- Document, build and test Equipment Rack #1.
- Engineering will be responsible for the document control release of all design documentation, drawings and part specifications.
- Develop subsystem specifications (as required) needed to meet the product requirements.
- Assign engineering resources to perform scope of work and deliverables for engineering tasks.
- Assign accountable owners for relevant WBS elements

2.4. QA Role/Responsibilities

- QA will provide a QA lead to coordinate validation efforts per program plan and to act as "owner" of all QA deliverables. The QA lead for this project is (b)(4); (b)(6)

- QA is responsible for the development of a QA Plan and subsequent PSQA test procedure
- QA is responsible for the Identification and shipping of Test articles
- QA will perform PSQA testing and assist with FAT validation
- QA will generate Engineering Anomaly Reports for any issue identified and will track all items deemed critical by the Program Team to closure.

2.5. Service Role/Responsibilities

- The Service Group will provide a lead to coordinate engineering efforts per program plan and to act as "owner" of all Service deliverables. The Service Lead for this project is (b)(4); (b)(6)
- The Service Group is responsible for the generation of a localized Service plan.
- The Service Group will assist in the performance of a Site Survey.
- The Service Group will provide an FRU spares list.
- The Service Group will order adequate spare parts to support the installation.
- The Service Group will support the creation of Operator and Maintenance Manuals.
- The Service Group will assist with the Installation and provide operator training.

2.6. Wolf Coach Role/Responsibilities

- Wolf Coach will provide a project lead to coordinate all applicable efforts per program plan and to act as "owner" of all Wolf Coach deliverables. This project lead will communicate directly with the S&DS Operations Lead. The Wolf Coach project lead will be(b)(4); (b)(6).
- Wolf Coach will provide secure space for storage of L-3 delivered parts.
- Wolf Coach will be procure and modify a suitable chassis.
- Wolf Coach will be responsible for the integration of the Cab Kit, OPS Room Kit, Boom Kit, Truck Exterior Kit, Equipment Room kit, Motion Control Kit, System Control Kit, Dynamic Brake Assembly, Linac Kit, Wireless Fence.
- Wolf Coach will balance Vehicle based on new X-ray components.
- Wolf Coach will assist with the execution of the Integration and Factory Acceptance Tests including ensuring weights and dimensions meet US DOT requirements.
- Wolf Coach will provide, when requested, timely engineering support for any item found discrepant during, or after, the Factory Acceptance Test.

3. Work Breakdown Structure

The effort can be broken down into 6 significant parts as listed below:

1.0 Program Management

1.1 Provide overall program management

2.0 Vehicle Integration: This WBS element consists of all activities required to procure an appropriate chassis, and to populate and modify for use as an integrated X-ray System. This WBS will be performed by Wolf Coach with oversight by the Project Manager and Engineering Lead.

2.1 Procurement of a **Freightliner** chassis

2.2 Chassis modification

2.2.1 Installation of Dual Idler Axles,

2.2.2 Hydraulic Drive System,

2.2.3 PTO Generator,

2.2.4 Surface Mount Air Conditioning Units.

2.3 Integration of the following components:

2.3.1 Cab Kit

2.3.2 OPS Room Kit

2.3.3 Boom Kit

2.3.4 Truck Exterior Kit

2.3.5 Equipment Room

2.3.6 Motion Control Kit

2.3.7 System Control Kit

2.3.8 Dynamic Brake Assembly

2.3.9 Linac Kit

2.3.10 Wireless Fence

2.4 Provide all wiring and conduit for the integration of above

2.5 Balance Vehicle based on new X-ray components.

2.6 Conduct (and assist L-3 S&DS with) an Integration Test including Validation of Vehicle Dimensions per US DOT Requirements and validation of Weight and Axle Loading Requirements per US Road Regulations

3.0 Component Procurement: This WBS element consists of all activities required to purchase, inspect and deliver to Wolf Coach all required components as identified and documented by Engineering. This WBS will be performed by Operations with some assistance from Engineering.

3.1 Procurement, inspection and kitting of a Cab Kit

3.2 Procurement, inspection and kitting of a OPS Room Kit

3.3 Procurement, inspection and kitting of a Boom Kit

3.4 Procurement, inspection and kitting of a Truck Exterior Kit

3.5 Procurement, inspection and kitting of a Equipment Room

3.6 Procurement, inspection and kitting of a Motion Control Kit

3.7 Procurement, inspection and kitting of a System Control Kit

3.8 Procurement, inspection and kitting of a Dynamic Brake Assembly

3.9 Procurement, inspection and kitting of a Linac Kit

3.10 Procurement, inspection and kitting of a Wireless Perimeter Fence Kit

3.11 Procurement, assembly and test of CXM Detector Boxes.

3.12 Procurement, inspection, assembly and test of the PLC Panel Interface Box

3.13 Procurement, inspection, assembly and test of Equipment Rack #1.

4.0 Product Validation – This WBS element consists of all activities required ensure the CX-M meets all technical specifications. This WBS will be performed jointly by Quality Assurance, Engineering and Wolf Coach

4.1 Performance of a Factory Acceptance Test at Wolf Coach including:

4.1.1 Validation of Vehicle Dimensions per US DOT Requirements

4.1.2 Validation of Weight and Axle Loading Requirements per US Road Regulations

4.1.3 Validation of Wolf Coach delivered functionality

4.2 Integration Test performed at the Wolf facility

4.3 Validation Test performed at the Wolf facility

4.4 Outgoing Inspection (PSQA) performed at the L-3 S&DS facility

4.5 Factory Acceptance Test (if required) with the Customer performed at the L-3 facility

4.6 Site Acceptance Test (if required)

5.0 Shipping – This WBS element consists of all activities required to deliver the CX-M. This WBS will be performed jointly by the Program Office, (b) (4) and L-3 Florida Ops

5.1 Secure proper shipping documentation

5.1.1 Commercial Invoice

5.1.2 End User Statement and Export License (if required)

5.2 Record, via digital photographs, basic views of the exterior and interior of the vehicle.

5.3 Ensure all externally accessible egress and equipment is locked and secure.

5.4 Arrange over the road vehicle Transport.

6.0 Installation and Training: This WBS element is to provide a successful installation, as well as training to the end users. This WBS will be performed by Customer Service with Assistance from the Program Office, (b) (4) and Engineering.

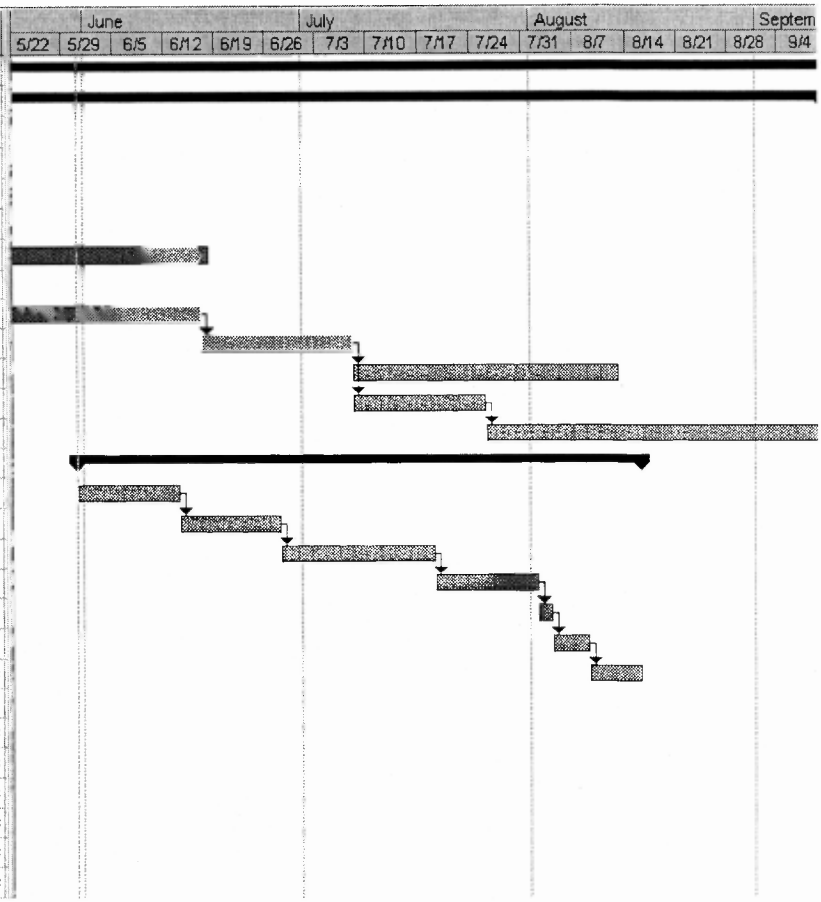
6.1 Perform a Site Survey and assessment

6.2 Create a spare parts and FRU list

6.3 Provide Operator Training

4. Program Milestones

	Task Name	Duration
1	**CX-M for US Customs and Border**	**210 days**
2	**Wolf Coach Tasks**	**155 days**
3	Chassis Conversion	23 days
4	Truck Housing	4 days
5	Fab. Floor Structure	41 days
6	Fab. Turret/Mast	32 days
7	Boom/Counterweight	40 days
8	Fab. Drivers Shield	10 days
9	Truck Electrical System	26 days
10	Install S&DS Equipment	15 days
11	Truck Finish Items	26 days
12	Install X-ray Source	12 days
13	Vehicle Integration and Test	34 days
14	**L-3 Operations Tasks**	**55 days**
15	Fab Detector Boxes	10 days
16	Fab Rack Power Supplies	10 days
17	Fab Computer Racks	15 days
18	Fab PLC and Operator Panels	10 days
19	Fab Dynamic Brake Assy	2 days
20	Fab KVMA Extenders	3 days
21	Ship Components to Wolf	5 days
22	**L-3 System Integration Tasks**	**55 days**
23	System Integration	15 days
24	Integration Test	15 days
25	Alignment	3 days
26	Linac Quality Check	2 days
27	System Validation	10 days
28	PSQA	10 days



5. Management

5.1. Communication of Schedule and Task Changes

Status reports will be issued. Program Reviews are held at critical milestones. WBS element meetings are held weekly. Major program issues are communicated to the VP's for assistance as appropriate.

Revision History

REV.	ECO #	Appr.	DESCRIPTION OF CHANGE	DATE
1.0	RCM		Original	5/20/05

This document was generated using template: 8201-10052-00 Rev B0

1. Introduction

1.1. Background

The L-3 CX-6000R is a rail cargo x-ray inspection system providing high resolution images and deep container penetration. The CX-6000R is capable of imaging all types of rail cars including double-stacked cars for any gauge railroad. The CX-6000R is also capable of producing these images while the railcar is in motion passing through the system.

1.2. Program Objectives

The overall objective of this program is to procure, integrate and validate a CX-6000R rail system, shipping it to a domestic location of the CBP within 270 days of contract award. After production is ramped-up, 150 day delivery of follow-on CX-6000R orders is expected.

The program plan is broken down into the following tasks:

A Procurement and of the long lead items

- A.1 Procurement of a (b) (4) X-ray source
- A.2 Procurement of the detector array assembly and housing boxes fron(b) (4)
- A.3 Procurement of the gantry crane and drive system from subcontractor – (b) (4)
- A.4 Procurement of Containment Box from fabrication house
- A.5 Procurement of Wireless Fence Kit
- A.6 Procurement of Radiation Detection equipment from - (b) (4)

B Production of sub-assemblies (All sub-assemblies to be built at L3's Henschel facility in Newburyport Massachusetts)

- B.1 Containment Box electronics
  - B.1.1 Procurement of bill materials
  - B.1.2 Assembly
  - B.1.3 Test per released test plan
  - B.1.4 Quality Validation
- B.2 Ground and Shelter Electronics Kit
  - B.2.1 Procurement of bill materials
  - B.2.2 Assembly
  - B.2.3 Test per released test plan
  - B.2.4 Quality Validation
- B.3 Detector Box Assembly
  - B.3.1 Procurement of bill materials
  - B.3.2 Assembly
  - B.3.3 Test per released test plan
  - B.3.4 Quality Validation

C Integration of containment box components

C.1.1 Installation of **Linac**

C.1.2 Installation of Containment box electronic subassemblies

C.1.3 Complete system wiring and interconnections.

C.1.4 Tests per released test plan

C.1.5 Quality Validation

D **Product Validation**:

D.1 Performance of a Factory Acceptance Test at L3's Henschel Facility

D.2 Validation Test performed at the L-3 facility

E Pre-Installation

E.1 Licensed Civil Engineer to provide site analysis and verification

E.2 Creation of site-specific drawing package

E.2.1 Including input from civil engineering assessment

E.3 Perform due-diligence on local contractors (if applicable)

F **Shipping**:

F.1 Secure proper shipping documentation:

F.1.1 Commercial Invoice

F.1.2 End User Statement and Export License (if required).

F.2 Ensure proper crating and packaging of system components.

F.3 Arrange over the road vehicle Transport from L3 to destination identified by CBP.

G **Installation**:

G.1 Manage civil work activities (if applicable)

G.2 Perform civil works verification visit.

G.3 Installation of CX-6000R

G.3.1 Installation of Gantry Crane and Drive System

G.3.2 Installation of Containment Box

G.3.3 Installation of Detector Boxes

G.3.4 Installation of Shelter and Ground Electronics

G.3.5 Paint touch-up and system cleaning

G.4 Perform system validation to ensure proper system performance (Burn-in)

G.5 Perform Site Acceptance Testing

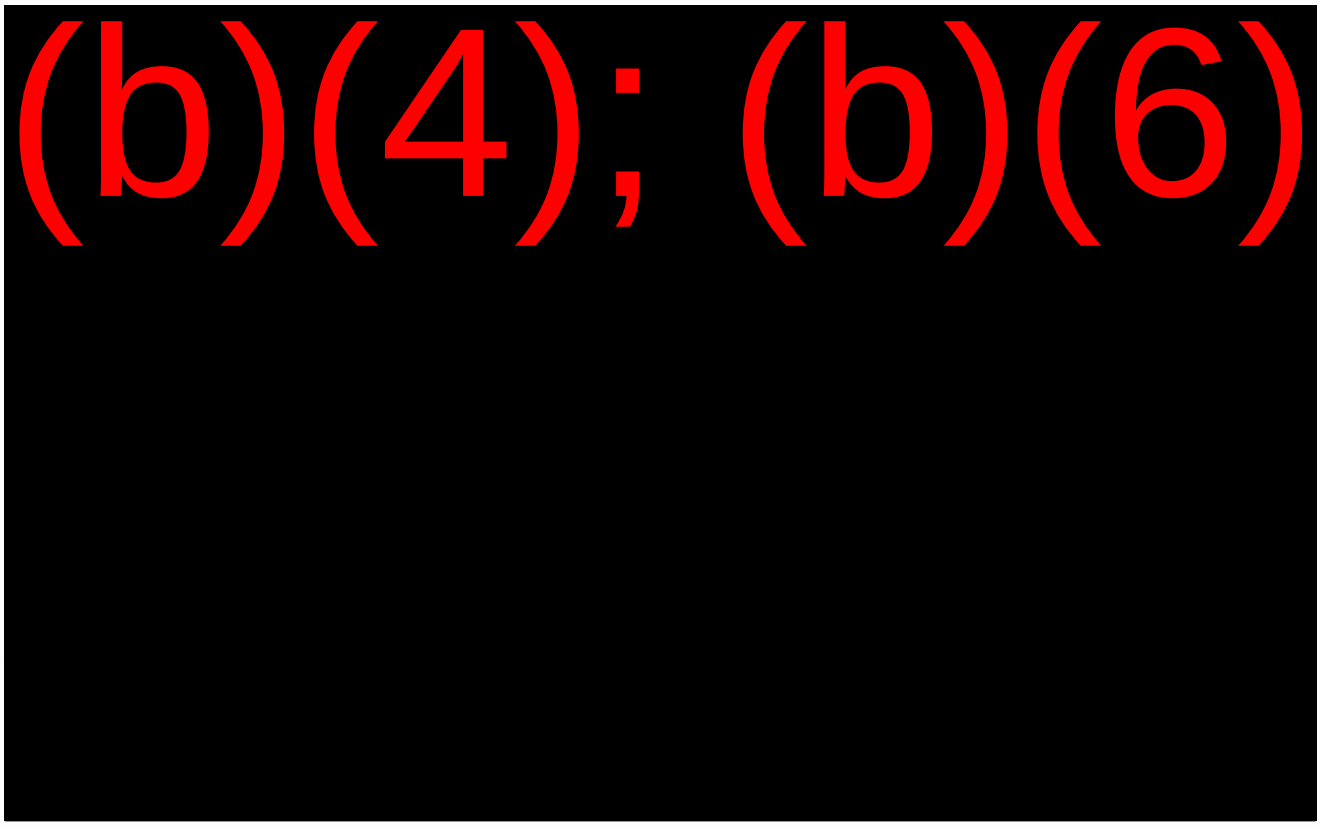
G.6 Provide Operator Training

2. Project Roles and Responsibilities

This program is of importance to the overall strategic plan of the Cargo product line. Project roles, responsibilities, and accountabilities will be clearly and specifically defined and managed. The following defines the roles/responsibilities of the L3 portion of the program.

Program Owner – The Cargo Office

Project Manager [PM] - the Project Manager will be the primary point of contact on this program. As such, the Project Manager will have full control over all aspects of this program. (b)(4); (b)(6) will serve as Project Manager for this project.



2.1. Project Manager Role/Responsibilities

- The Project Manager is the primary interface with the L-3 S&DS team. All directions related to cost, schedule, scope of work are the responsibility of the Program Manager.
- The Project Manager is primary interface with all subcontractors. Any subcontractor direction related to cost, schedule, and the scope of work are the responsibility of the Program Manager.
- The Project Manager will develop schedule of program critical milestones
- The Project Manager will coordinate pre-kickoff planning efforts with functional groups

- The Project Manager will coordinate development of detailed program plan with functional groups
- The Project Manager will maintain Customer contact and hold periodic Customer reviews throughout the program.
- The Project Manager will oversee approval of system and sub-system specifications
- The Project Manager will maintain Program cost/schedule/performance management

2.2. Operations Role/Responsibilities

- The Operations Lead will coordinate the procurement, assembly and test of required L-3 components based on the design and specifications developed by Engineering. The Operations Lead for this project will be (b)(4); (b)(6)
- Operations will procure, assemble and test CXM Detector boxes.
- Operations will drive creation of any required L-3 assemblies (aka "make parts")
- Operations will assign accountable owners for relevant WBS elements

2.3. Engineering Role/Responsibilities

- Engineering will provide a technical lead / Project Engineering support to coordinate engineering efforts per program plan and to act as "owner" of all Engineering deliverables. The Engineering Lead for this project is (b)(4); (b)(6)
- The Engineering Lead, working with the Project Manager, will be responsible for the overall technical oversight for Wolf Coach
- The Engineering Lead will oversee the development of labor and material cost estimates (and supporting basis of estimates) to WBS in support of the program plan/project approval documentation.
- Document, build and test the PLC Panel Interface Box.
- Document, build and test Equipment Rack #1.
- Engineering will be responsible for the document control release of all design documentation, drawings and part specifications.
- Develop subsystem specifications (as required) needed to meet the product requirements.
- Assign engineering resources to perform scope of work and deliverables for engineering tasks.
- Assign accountable owners for relevant WBS elements

2.4. QA Role/Responsibilities

- QA will provide a QA lead to coordinate validation efforts per program plan and to act as "owner" of all QA deliverables. The QA lead for this project is (b)(4); (b)(6)
- QA is responsible for the development of a QA Plan and subsequent PSQA test procedure
- QA is responsible for the Identification and shipping of Test articles
- QA will perform PSQA testing and assist with FAT validation
- QA will generate Engineering Anomaly Reports for any issue identified and will track all items deemed critical by the Program Team to closure.

2.5. Service Role/Responsibilities

- The Service Group will provide a lead to coordinate engineering efforts per program plan and to act as "owner" of all Service deliverables. The Service Lead for this project is (b)(4); (b)(6)
- The Service Group is responsible for the generation of a localized Service plan.
- The Service Group will assist in the performance of a Site Survey.
- The Service Group will provide an FRU spares list.
- The Service Group will order adequate spare parts to support the installation.
- The Service Group will support the creation of Operator and Maintenance Manuals.
- The Service Group will assist with the Installation and provide operator training.

2.6. Installation Role/Responsibilities

- Installation team will perform all duties to install the CX-6000R in the field as outlined in the program schedule. The "owner" of the installation activities is (b)(4); (b)(6)
- Installation group will provide management over local contractors (if applicable).
- Installation team to ensure all tools are onsite to perform work as required.
- Installation team will perform all duties to install the CX-6000R in the field as outlined in the program schedule.
- Installation team will provide support through QA testing

2.7. Customer Roles/Responsibilities

- US Customs and Boarder Patrol (CBP) is responsible for choosing the installation site of the CX-6000R system.
- CBP is responsible for providing a program interface through the completion of the program.
- CBP is responsible for identifying acceptable training dates for end users.
- CBP is responsible for review and approval at key milestones.

3. Work Breakdown Structure

The effort can be broken down into 5 significant parts as listed below:

1.0 Program Management: Provide overall program management

2.0 Component Procurement: This WBS element consists of all activities required to purchase, inspect and deliver to L3 Henschel of all required components as identified and documented by Engineering. This WBS will be performed by Operations.

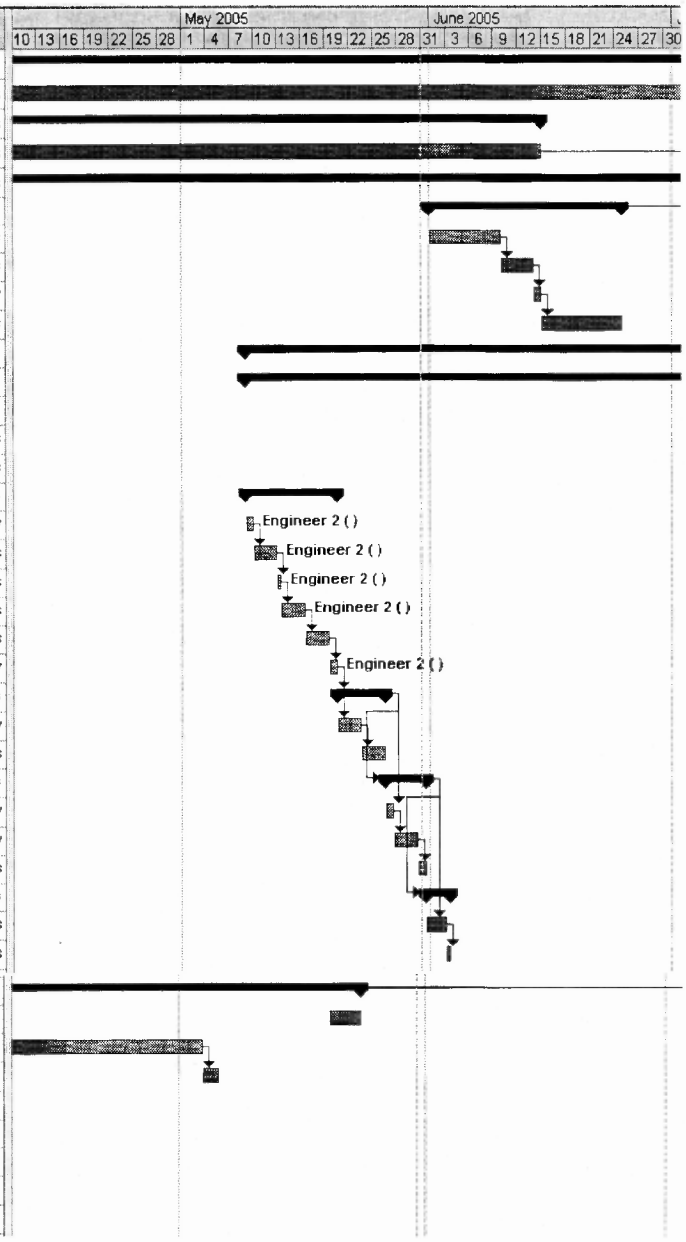
3.0 Sub-assembly Production: This WBS element consists of all activities related to the assembly of the system sub-components, loading of software and PLC codes.

4.0 Build Kit Assembly and Validation: This WBS element consists of the tasks required to assemble the build kit, verify kit compliance to documentation, sub-component labeling, and packaging. This WBS element consists of all activities required to deliver the CX-3800G. This WBS will be performed jointly by the Program Office, (b) (4) and L-3 Florida Ops

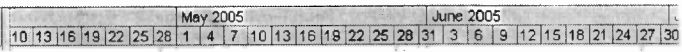
5.0 Installation, Validation and Training: This WBS element is to provide a successful installation, as well as system burn in time and validation. This WBS element also includes training to the end users. This WBS will be performed by Customer Service with Assistance from the Program Office, (b) (4), and Engineering.

4. Program Milestones

	Task Name	Duration
1	- Railroad Unit (U.S. Customs and Boarder Protection)	**119 days**
2	1.0 Program Management	119 days
3	- **2.0 Component Procurement**	**50 days**
4	Purchase Bill of Materials	10 wks
5	- **3.0 Sub-Assembly Production**	**75 days**
6	- **NAI Production**	**18 days**
7	Erect Rail Tower	7 days
8	Testing	2 days
9	QA Buy off	1 day
10	Unit disassembly and paint	8 days
11	- **L-3 Production**	**52 days**
12	- **Assembly**	**52 days**
13	- **Detector Boxes**	**6 days**
14	Assemble CXDA Detector boxes	40 hrs
15	CXDA Detector Box testing	8 hrs
16	- **Assemble C-Box**	**9.5 days**
17	PLC Panel	1 day
18	DAS Power Supply	3 days
19	DAS Computer	4 hrs
20	Interconnect Panel	8 hrs
21	Sub-assembly integration	3 days
22	Testing - Power-up	1 day
23	- **Assemble PDP Gantry**	**4 days**
24	Build-up Din rail	1 day
25	Assy PLC components and Panel	3 days
26	- **Assemble Ground Electronics**	**3 days**
27	Build and load software	1 day
28	Assemble Rack	1 day
29	Test	8 hrs
30	- **Assemble Operators Console**	**3 days**
31	Build and Program	2.5 days
32	Testing	4 hrs
33	- **Containment Box**	**34 days**
34	Install Linac	2 days
35	Build time	4 wks
36	Ship to System Integration	2 days
37	- **4.0 Build Kit Assembly and Validation**	**27 days**
38	- **Build Kit**	**7 days**
39	Assemble and Label	7 days
40	Pack and crate - outside vendor	3 days
41	Ship	7 days



	Task Name	Duration
42	- **5.0 Installtion, Validation, & Testing**	**16.63 days**
43	- **Installation**	**16.63 days**
44	Inventory Shipment	4 hrs
45	Rail Tower Erection (Day 1)	16 hrs
46	Rail Tower Erection (Day 2)	24 hrs
47	- **Installation of Control Center**	**2.75 days**
48	Installation of system computers	6 hrs
49	cabling	8 hrs
50	Software	4 hrs
51	Control Panel	4 hrs
52	- **Installation of the Containment Box**	**10.13 days**
53	Install Containment Box	3 hrs
54	Install L3 Sub-assemblies	1 wk
55	Install Linac	6 hrs
56	Cabling	8 hrs
57	Linac Alignment	3 days
58	- **Installation Of Module Boxes**	**7.13 days**
59	Mount Modules to Gantry	8 hrs
60	Align Modules with Linac	8 hrs
61	- **System Clean-up**	**16.63 days**
62	Paint Touch-up	8 hrs
63	Cabling tie-up	8 hrs
64	Peripherals	8 hrs
65	Float	2 days
66	Burn in	5 days
67	QA - FAT	5 days
68	Red Book	1 day
69	Operators Training (Customer)	5 days



5. Management

5.1. Communication of Schedule and Task Changes

Status reports will be issued. Program Reviews are held at critical milestones. WBS element meetings are held weekly. Major program issues are communicated to the VP's for assistance as appropriate.

5.2. Program Charge Numbers

Charge numbers to be determined at start of Program

Revision History

REV.	ECO #	Appr.	DESCRIPTION OF CHANGE	DATE
1.0	RCM		Original	5/23/05

This document was generated using template: 8201-10052-00 Rev B0

6 Quality Assurance Plan

communications

Security & Detection Systems

Business-Quality Management System Manual

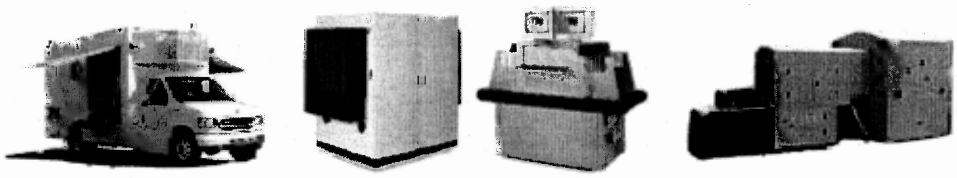


Table of Contents

.i Introduction and Signatures
.ii About Us
.iii Vision, Mission, Quality Policy and "Doing Things Right"
.iv Introduction
0.1 General
0.2 Process Approach

1. Scope
2. References
3a. Definitions
3b. Abbreviations
3c. Terms

4 Quality Management System
4.1 General Requirements
4.2 Documentation Requirements
4.2.1 General
4.2.2 Quality Manual
4.2.3 Control of Documents
4.2.4 Control of Records
5 Management Responsibility
5.1 Management Commitment
5.2 Customer Focus
5.3 Quality Policy
5.4 Planning
5.4.1 Quality Objectives
5.4.2 Quality Management System Planning
5.5 Responsibility, Authority and Communication
5.5.1 Responsibility and Authority
5.5.2 Management Representative
5.5.3 Internal Communication
5.6 Management Review
5.6.1 General
5.6.2 Review Input
5.6.3 Review Output
6 Resource Management
6.1 Provision of Resources
6.2 Human Resources
6.2.1 General
6.2.2 Competence, Awareness and Training
6.3 Infrastructure
6.4 Work Environment
7 Product Realization
7.1 Planning of Product Realization
7.2 Customer-related Processes
7.2.1 Determination of Requirements Related to the Product
7.2.2 Review of Requirements Related to the Product
7.2.3 Customer Communication
7.3 Design and Development

7.3.1 Design and Development Planning
7.3.2 Design and Development Inputs
7.3.3 Design and Development Outputs
7.3.4 Design and Development Review
7.3.5 Design and Development Verification
7.3.6 Design and Development Validation
7.3.7 Control of Design and Development Changes

7.4 Purchasing
7.4.1 Purchasing Process
7.4.2 Purchasing Information
7.4.3 Verification of Purchased Product

7.5 Production and Service Provision
7.5.1 Control of Production and Service Provision
7.5.2 Validation of Processes for Production and Service Provision
7.5.3 Identification and Traceability
7.5.4 Customer Property
7.5.5 Preservation of Product

7.6 Control of Monitoring and Measuring Devices

8 Measurement, Analysis and Improvement

8.1 General

8.2 Monitoring and Measurement
8.2.1 Customer Satisfaction
8.2.2 Internal Audit
8.2.3 Monitoring and Measurement of Processes
8.2.4 Monitoring and Measurement of Product

8.3 Control of Nonconforming Product

8.4 Analysis of Data

8.5 Improvement
8.5.1 Continual Improvement
8.5.2 Corrective Action
8.5.3 Preventive Action

9a. Quality Management System Diagram and Explanation
9b. Quality Management System Goals and Objectives
10. Quality Manual Revision History

INTRODUCTION

This Business-Quality Management System Manual establishes guidelines and practices for use by the entire L-3 Security & Detection Systems - Woburn staff to ensure the highest level of customer satisfaction with our products.

This manual documents a quality program that complies with the internationally accepted quality systems standard "ISO 9001-2000 Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing".

This manual is distributed and maintained on a controlled-copy basis for internal operations. Controlled copies issued will be clearly labeled "Controlled Copy".

This document may be revised through the ECO process with the authorization of the ISO Management Representative.

Compliance to this Business-Quality Management System Manual and the Woburn - SDS Quality Policy is mandatory.

L-3 Security & Detection Systems Inc., - Woburn

About Us

L-3 Security & Detection Systems (SDS), Inc. — the world's leading supplier of X-ray security screening systems and metal detectors — offers a broad array of products to the aviation, transportation, and public building security markets. We proudly boast over 18,000 systems in operation worldwide—screening packages for explosives, firearms, contraband, and drugs in the vast majority of all commercial airports, jails, postal facilities, and government buildings.

SDS has state-of-the art manufacturing facilities in California, Florida, Massachusetts, and the United Kingdom. The headquarters in Woburn, Massachusetts, are responsible for engineering, marketing, finance, customer service, and administration. Our Florida facility is the development and manufacturing center of one of our Transportation Security Administration (TSA) Certified systems. Bracknell, UK is our European base of operations for sales, service, and some manufacturing. Sydney, Australia is our Asian base of operations for sales and service. The Four facilities accommodate 30 years of experience in the design, creation, and installation of X-ray screening systems.

SDS offers four product lines specially designed to meet the ever-changing needs of the Security markets: Conventional X-ray;(b) (7)(E) ; Certified EDS; and Cargo X-ray Imaging Solutions. Each product line relies on state-of-the-art, patented X-ray technology.

Conventional products allow operators to(b) (7)(E) Our Certified EDS have met the United States Transportation Security Administration's (TSA) requirements. Cargo X-ray inspection systems are large enough to image the contents of a fully loaded(b) (7)(E) cargo container. Systems range in size, throughput capacity, and optional accessories while still providing the highest level of imaging and detection available to the market.

L-3 SDS - Woburn embraces an ISO 9000 management methodology. Our experience in project management extends from defect-free product manufacturing to need and cost-benefit analysis, site surveys, and on-time delivery. Our field service team, the largest in the industry today, provides uninterrupted equipment maintenance and support 24 hours a day, 7 days a week. SDS is the leading supplier of high-performance security screening equipment serving the security market—where the best and the brightest in the industry work!

Mission

To be the customers leading global provider
of total detection solutions, services and integration capabilities

Quality Policy Statement

L-3 Communications Security-Woburn

We are committed to providing products and services to our customers that satisfy all of their requirements and expectations.
We are focused to deliver these products defect free, through a philosophy of process improvement and defect prevention to realize total customer satisfaction.
We deliver to all customers the superior capabilities of our products and experience of our staff to ensure total customer success in all business relationships.

Note: The Mission & Quality Policy work together to move SDS - Woburn closer to its Vision.
Note: L-3 Communications Security and SDS - Woburn Inc. is also known as SDS - Woburn

Through the implementation and management of the ISO 9001 registered **Business-Quality Management System** Manual, all Detection System's Team Members are driven to produce high quality, reliable, explosive and contraband detection for airports and other security sensitive locations.

The Detection System Team believes that by **"Doing Things Right the First Time":**

- All team members are encouraged to continuously strive to understand and satisfy customer requirements,
- Commitment to the "Teamwork" environment is supported,
- Continuous Quality Improvement efforts enhance product quality and reduce cost,
- The Quality System evolves as the company grows,
  Our professional work ethic maintains the SDS culture and philosophy.

L-3 Communication's Security and Detection System's Management will strive to:

- Maintain the registration to the ISO 9001:2000 standard
- Continuously monitor, analyze and improve our quality standards
- Make SDS - Woburn a great place to work and encourage Employees' participation/involvement in employee annual reviews

INTRODUCTION

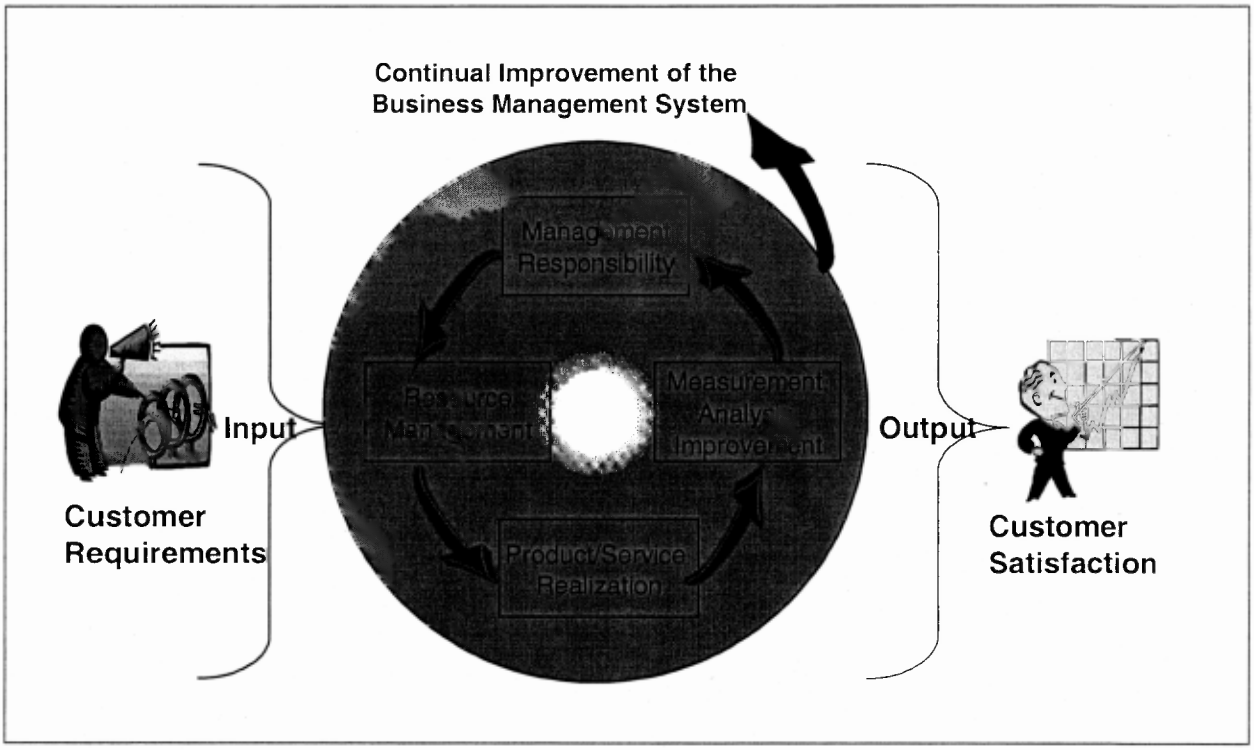
0.1 General

This Business-Quality Management System Manual specifies requirements for SDS - Woburn used to address customer satisfaction, to meet customer and applicable regulatory requirements and to meet ISO 9001:2000 requirements, and is supported by additional procedures.

0.2 Process Approach

This Manual has adopted the process approach to quality management.
Figure 1, is a conceptual illustration of the process approach at SDS - Woburn

Figure 1



1. Scope

L-3 SDS – Woburn is dedicated to the design, development, and manufacture of high-quality, reliable advanced explosives and contraband SDS for airports, industry and governments. Corporate objectives are achieved by first understanding our customers' needs, implementing those needs into product designs, understanding applicable regulatory requirements and applying good manufacturing practices to constantly strive to exceed customer expectations.

This Manual defines and governs the quality system policies and procedures to be utilized at SDS – Woburn. It represents official facility policy and shall be used as standard practice by all departments of the facility in consistently developing and administering systems for the control and assurance of quality, reliability and for continual improvement of product and services.

2. References

2.1 International Standards

ANSI/ISO/ASQ Q9001-2000 – Quality Management Systems – requirements
ANSI/ESD S20.20-1999 – Electrostatic Discharge Control Program
8301-10001-04, Flowcharts
8301-10001-05
8301-10001-06
8301-10001-07
8301-10001-08
8301-10xxx-xx Operating Procedures
8301-10000-01 Operating Procedure Listing

3a. Definitions

3a.1 L-3 Communications Security and SDS – Woburn Business-Quality Management System Manual

The Level 1 Business-Quality Management System Manual initiated and approved by management. It represents the established quality policy and quality system objectives. See figure 2.

3a.2 Top Management

General Manager, with input from all functional Vice-Presidents

3a3 Management Team

a) General Manager,

b) Director of Operations, and

c) ISO Management Representative

3a4 Policies

L-3 Policies are more specific as compared to the policies found in the Quality Manual.

3a.5 Flowcharts

Level II documentation that visually define the processes making up the quality system and identifies the documents and records that serve as objective evidence of effective implementation and control. See Figure 2.

3a.6 Operating Procedures (OP)

Level II documentation that defines the processes making up the quality system and identifies the records that serve as objective evidence of effective implementation and control. See Figure 2.

3a.7 Work Instructions

The Level III documentation providing detailed instructions for performing quality tasks. See figure 2.

3a.8 Documentation Hierarchy

See figure 2.

3a.9 Engineering Change Order [ECO]

An Engineering Change Order document authorizing releases of new product documents and/or changes to existing product documents. Changes to this quality manual and Levels II and III documentation will be controlled by the ECO process.

3a.10 ECO Board

A group composed of following facility representatives, as a minimum: Engineering, Software Engineering, Material Control, Production, Manufacturing Engineering, Customer Support, Quality Assurance and Program Management. This Board approves all ECOs.

3a.11 Continual Improvement

The ability to pursue optimal performance in Detection System – Woburn's Products and Processes is only possible when a Quality Management System is constructed to allow employees the ability to suggest changes that will improve our methods. Continual Improvement is implemented at SDS – Woburn through the combined use of ISO Management Reviews, monthly metric reviews, quality audits, corrective actions, and the ECO Operating Procedure.

3b. Abbreviations

BQMS	Business Quality Management System
QM	L-3 Detection & Security Systems Quality Manual
OP	L-3 Detection & Security Systems Operation Procedure
SQA	Systems Quality Assurance Personal
CS	L-3 Detection & Security Systems Customer Service
PM	Project Manager
QM	Quality Management
KPI	Key Performance Indicators
ECO	Engineering Change Order
MRP	Material Requirement Planning

3c. Terms

NOTE: The terms used in this Manual are to describe the supply-chain as follows:

SUPPLIER ⇒ ORGANIZATION ⇒ CUSTOMER

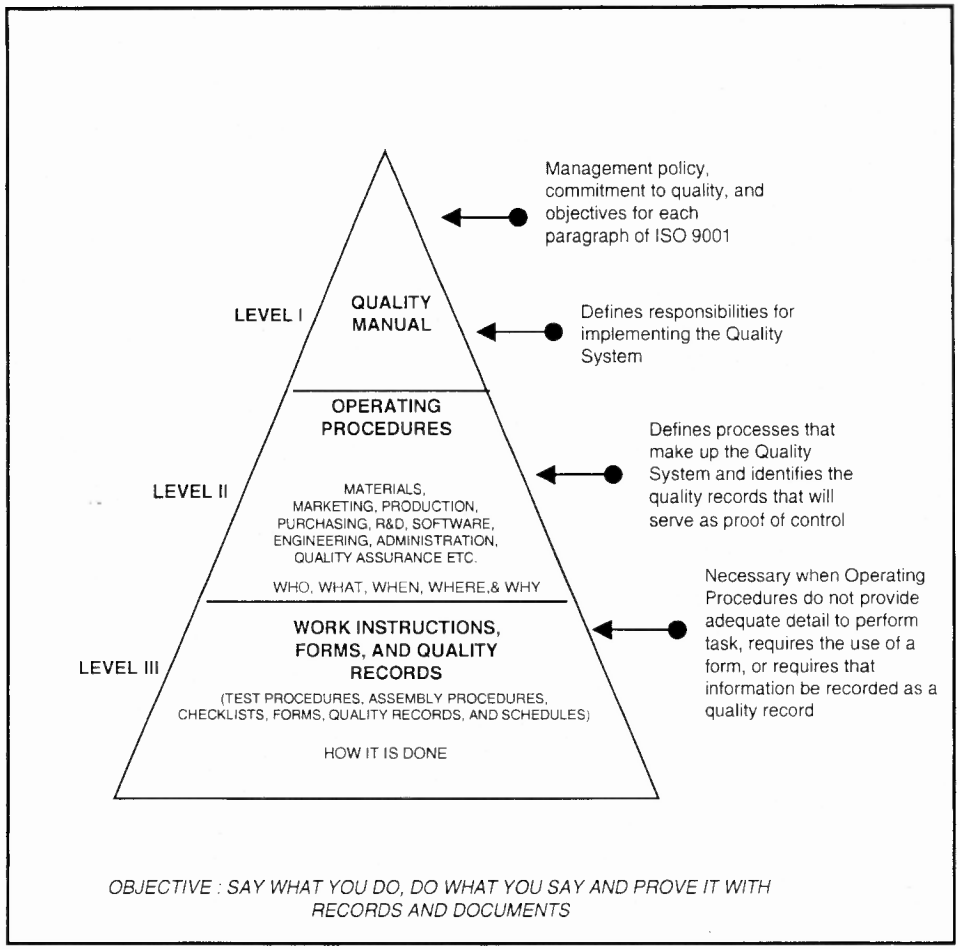


Figure 2. ISO 9001 Quality Documentation Hierarchy

(4) BUSINESS QUALITY MANAGEMENT SYSTEM (BQMS)

4.1 General Requirements

SDS - Woburn has established, documented, implemented, maintains and continually improves the effectiveness of its BQMS in accordance with the requirements of ISO 9001:2000.

To implement the BQMS, SDS - Woburn:

a) Identified the processes needed for the BQMS and their application throughout the organization,
b) Determined criteria and methods required to ensure the effective operation and control of these processes
c) Ensured the availability of resources and information necessary to support the operation and monitoring of these processes
d) Measured, monitored and analyzed these processes, and implemented action necessary to achieve planned results and continual improvement

When appropriate, additional standards can be implemented by the addition of special actions designed specifically to satisfy customer contracts or statutory regulatory requirements.

SDS - Woburn manages all processes identified in this Manual in accordance with the requirements of ISO 9001:2000.

Whenever SDS – Woburn outsources a process that affects product conformity with requirements – the appropriate controls shall be identified and exercised over such processes.

Supporting Documents

8301-10000-00 L-3 Detection and Security Systems Quality Manual

4.2 Documentation Requirements

4.2.1 General

The Quality Management System ensures that all necessary policies, procedures, instructions and records are in place as a documented part of the work process so products consistently conform to planned performance standards.

The BQMS documentation includes:

a) SDS - Woburn's Quality Manual, Quality Policy and quality objectives
b) Flowcharts
c) Documents** required by SDS - Woburn to ensure the effective planning, operation and control of its processes
d) Records required per ISO 9001:2000

** This includes, but isn't limited to; Operating Procedures, Work Instructions, checklists, forms, and drawings and includes such documents related to such activities as:

a) Defining and controlling quality records,
b) Addressing the training needs of employees,
c) Assessing the supply of existing and future test equipment needs,
d) Ensuring the provision of adequate product design, and
e) The secure supply of acceptable product material

Quality Records and Audit Reports are used to assist in the monitoring and continual improvement of the effectiveness the BQMS.

4.2.2 Business-Quality Management System Manual

This manual has been established and is maintained to include:

a) The scope of the quality management system, including details and justification for any exclusions,
b) References to documented procedures, and
c) A description of the sequence and interaction of the processes of the BQMS.

This manual shall be maintained as a controlled document.

4.2.3 Control of Documents

The Documentation Control Department is responsible for the following areas in accordance with established OPs:

a) Establishing and maintaining documentation standards,
b) Chairing the Engineering Change Order (ECO) Board which reviews and approves all documentation changes,
c) Coordinating and controlling changes to existing documents and new releases,
d) Maintaining, storing, and distributing all revision controlled engineering documentation,
e) Maintaining and controlling the Master Approved Documentation List,
f) Providing a document distribution service for all documents maintained,
g) Maintaining the documentation electronic files database.

Documents required for the BQMS are controlled per 8301-10202-00, Documentation Control OP.

4.2.4 Control of Quality Records (4.16)

SDS – Woburn maintains records to demonstrate that the required quality goals have been obtained and that the quality management system is operating effectively and efficiently. Records of all activities related to quality are maintained and controlled.

These records must be:

a) complete,
b) legible,
c) identifiable, and
d) easily retrievable.

Operating Procedures specify the type of records to be maintained, the organization responsible for storage, their storage location and retention period. Records will be kept in an environment suitable for their protection during the retention period.

Records of significant quality functions will be retained for a minimum of three years as a standard practice. Operating Procedures identify which records must be maintained for longer periods of time (in order to comply with customer or statutory requirements) and those that may be retained for a shorter period.

Records required for the BQMS are controlled per 8301-10016-00, Control of Quality Records OP. Records may be in the form of hard-copy or electronic media. These records must be readily retrievable to satisfy requests by customer and regulatory agencies.

Off-site protective storage may be used when appropriate.

Supporting OP Documents

See Level II, QMS Macro Flowchart OP, 8301-10000-04.

(5) MANAGEMENT RESPONSIBILITY

5.1 Management Commitment

SDS Top Management is responsible for providing the necessary leadership, support and training to implement the BQMS. Management personnel provides evidence of its commitment to the development and improvement of the BQMS by:

a) Communicating to SDS - Woburn employees the importance of meeting customer as well as regulatory and legal requirements,

b) Establishing the quality policy and quality objectives,

c) Conducting management reviews, and

d) Ensuring the availability of necessary resources.

5.2 Customer Focus

SDS Top Management ensures that all efforts associated with customers are ethical and appropriate to the customer need and expectation. It is Top Managements goal to establish, maintain and enhance processes that identify Customer needs and expectations, convert them into requirements and ensure they are fulfilled with the aim of achieving customer satisfaction. Measurement, analysis and improvement actions are incorporated into the key performance indicators and are reviewed at the ISO Management Reviews to further enhance customer focus.

5.3 Quality Policy

In order for the BQMS to work to its full potential, everyone (from top management down) must be fully committed to the policy outlined in this Manual.

Top Management has defined the quality policy. This Quality Policy:

a) Is appropriate to the purpose of SDS – Woburn,

b) Includes a commitment to meet requirements and to continually improve the effectiveness of the BQMS,

c) Provides a framework for defining, establishing, documenting and reviewing quality objectives,

d) Is communicated and understood at appropriate levels within the company, and,

e) Is reviewed for continuing suitability.

5.4 Planning

5.4.1 Quality Objectives

Top Management will ensure that business objectives, quality program effectiveness and key performance indicators are established annually and that these objectives are used to manage the overall business (at all appropriate levels and as defined by the scope). These quality objectives are:

a) Measurable,

b) Support customer focus

c) Consistent with the Quality Policy

d) Include the commitment to continual improvement as well as those needed to meet requirements for product.

5.4.2 Quality Management System Planning

Top Management will ensure that the resources needed to achieve the quality objectives are identified and planned. Quality planning is actually accomplished through the Management Review of the BQMS, hardware and software design changes and continual improvement and preventive action methodologies. The Quality Plan is documented in the Level I, II, and III documentation and is followed by all employees.

The quality plan is actually an continuously evolving documentation base impacted by strategic management goals, product verification activities, the product design and enhancement process, established and improved measurement techniques and equipment, and use of data derived from quality records. It is documented and kept according to Management Responsibility Macro Flowchart OP, 8301-10000-05 and Product Realization Macro Flowchart OP, 8301-10000-07.

The ISO Management Representative ensures that proposed changes to the BQMS are conducted in a controlled manner and that the integrity of the BQMS is maintained during any changes.

Quality Planning Records are documented and maintained on file.

5.5 Responsibility, Authority and Communication

The sum of all the functional groups, and the areas over which each has direct responsibility, form the total organization needed to implement a complete BQMS.

5.5.1 Responsibility and Authority

Additionally, Management has identified positions and their interrelations along with responsibilities and authority and communicated these to SDS - Woburn via the organization chart and job descriptions. The Management Team is comprised of the:

d) General Manager,
e) Director of Operations, and
f) ISO Management Representative

A functional organization chart is posted at several locations in the facility which are easily accessible to all employees.

5.5.2 Management Representative

The General Manager has appointed the Director of Quality Assurance as the BQMS Management Representative who, irrespective of other responsibilities, has the responsibility and authority for:

a) Ensuring that processes of the BQMS are established, implemented and maintained,
b) Reporting to top management on the performance of the BQMS, including needs for improvement,
c) Promoting awareness of customer requirements throughout SDS – Woburn,
d) Acting as liaison with external parties on matters relating to the BQMS.

5.5.3 Internal Communication

SDS - Woburn has created appropriate processes to ensure communication among its various levels and functions regarding the processes of the BQMS and their effectiveness.

5.6 Management Review

5.6.1 General

Management Reviews are an ongoing process and are attended quarterly by the Management Team. The ISO Quality Management Representative has the authority to review the monthly quarterly metrics and report any issue to top management prior to the quarterly meeting that could negatively impact the effectiveness of the BQMS. The purpose of each Management Review is to assess the status, effectiveness and continuing suitability of the BQMS as a basis for improvement.

The Quality Manual and Operating Procedures will be maintained so that they are current with the Detection System – Woburn's policy and processes.

5.6.2 Review Input

Input to the management review includes current performance and improvement opportunities related to the following:

a) Audit results,
b) Feedback and other information from internal and external customers,
c) Process performance and product conformance,

d) Status of preventive and corrective actions,

e) Follow-up actions from earlier management reviews, and

f) Changes that could affect the BQMS

g) Recommendations for improvement

5.6.3 Review Output

The Management Review will result in actions related to:

a) Improvement of the effectiveness of the BQMS and its processes,

b) Improvement of product related to customer requirements, and

c) Resource needs.

Supporting OP Documents

See Level II, Management Responsibility Macro Flowchart OP, 8301-10000-05

(6) RESOURCE MANAGEMENT

6.1 Provision of Resources

Top Management working with staff reviews resources - as needed. The appropriate organizational resources will be provided to ensure that the BQMS is maintained and its effectiveness continually improved. Customer satisfaction will be enhanced through the deployment of necessary resources and continuous improvement actions with the goal of meeting all customer requirements.

6.2 Human Resources

6.2.1 General

Personnel who are assigned responsibilities defined in the BQMS and organizational chart are deemed competent on the basis of applicable education, training, skills and experience.

6.2.2 Competence, Awareness and Training

SDS - Woburn employees are hired based on their professional and technical qualifications to perform those duties and fulfill those responsibilities of the position for which they have been hired. Department managers are responsible for:

a) Ensuring that personnel assigned to their departments are qualified to perform their work assignments and fully understand the quality requirements of their jobs,

b) Making sure that personnel appreciate how important the actions they perform related to process and product quality contributes towards the achievement of the quality objectives;

It is implicit that each employee of SDS – Woburn has responsibility for the quality of his or her work. However, all managers and supervisors are responsible for ensuring that their employees are qualified to perform their jobs, are adequately trained, and are knowledgeable of the Quality Policy and OPs that define specific responsibility and actions that directly affect quality.

Employee training will be assessed

a) To ensure the effectiveness of such training, and
b) Annually during the internal audit activities

Records of the type and duration of training will be maintained as required in the applicable Operating Procedure by Human Resources.

6.3 Infrastructure

SDS - Woburn provides and maintains its facilities to achieve the conformity of product, including:

a) Workspace and associated facilities,
b) Process equipment, hardware and software,
c) Supporting services.

6.4 Work Environment

SDS - Woburn maintains its facilities to identify and manage the human and physical factors of the work environment needed to achieve product conformity, as appropriate.

Supporting OP Documents

See Level II, Resource Management Macro Flowchart OP, 8301-10000-06

(7) PRODUCT REALIZATION

7.1 Planning of Product Realization

Detection System – Woburn plans and develops the sequence of processes and sub-processes required to produce its products. Planning of these manufacturing processes is consistent with the other requirements of SDS - Woburn's BQMS and is documented in forms suitable for SDS - Woburn's method and areas of operation. Additionally as part of the planning process, SDS - Woburn has determined the following, as appropriate:

a) Quality objectives for the product, project or contract,
b) The need to establish processes and documentation, and provide resources and facilities specific to the product,
c) Verification and validation activities, and the criteria for acceptability,
d) Records are necessary to provide confidence of conformity of the processes and resulting product.

Documentation that describes how the processes of the BQMS are applied for a specific product, project or contract can be referred to as a quality plan.

7.2 Customer-Related Processes

7.2.1 Identification of Customer Requirements

SDS - Woburn determines customer requirements including:

a) Product requirements specified by the customer, including the requirements for availability, (post) delivery and support,

b) Product requirements not specified by the customer but necessary for intended or specified use, where known,

c) Obligations related to product, including regulatory and legal requirements.

7.2.2 Review of Product Requirements

Contracts entered into by SDS – Woburn are reviewed to ensure the capability and feasibility (technical, commercial and qualitative) for compliance. Contract Review is the responsibility of the Global Business Development Group. Such reviews provide for assessment of both technical and business aspects of each contract. Contracts are reviewed before acceptance for:

a) Clearly defined requirements (including lead-time for manufacturing),

b) Capability to meet customer specified requirements,

c) Appropriate statutory, regulatory and performance requirements,

d) Terms and conditions,

e) Warranty,

f) Installation,

g) Customer support and training requirements

Contracts are updated as customer-specified requirements are modified and accepted. Relevant documentation is amended to reflect the changes and personnel are made aware of the requirements changed.

Formal OPs describe the review process for quotations, contracts and amendments to orders. All nonstandard equipment and services require the approval of other relevant departments. A complete record of request for quotation through contract completion is maintained by individual contract.

Records of contract and amendment reviews are documented and maintained on file.

7.2.3 Customer Communication

SDS - Woburn arranges communication as appropriate for customers relating to:

a) Product information,

b) Inquiries, contracts or order handling, including amendments,

c) Customer feedback, including customer complaints.

7.3 Design and Development

Product development begins at the requirements definition stage and progresses through the various stages of the product life cycle. Each development project is planned with formal review gates at which the viability and progress status of the project is reviewed for acceptability. Prototypes are tested over their specification range in the Engineering design and QA Testing phases to provide confidence of design acceptability and stability. The steps of the design process are documented and executed in accordance with OPs.

Records of design processes are maintained.

7.3.1 Design and development planning

A Project Manager (PM) is assigned to each project. The PM is responsible for assuring that proper reviews and approvals occur before the start of the project. They are also responsible for managing the project through its completion and for implementing and documenting the project in accordance with the established OPs. The PM will coordinate the necessary schedule, resource allocation, project plan, design reviews, and for the documentation of all phases of the project.

The PM shall manage the interfaces between all supporting groups involved in design, development, verification, and validation to ensure effective communication and clear assignment of responsibility is understood.

Planning output shall be updated, as appropriate, as the design and development progresses.

7.3.2 Design and development inputs

Design definition is established through a process of collecting and reviewing design inputs at a series of design review meeting with selected key personnel. Key personnel are assigned at project conception and may include representatives from Marketing, Hardware and Software Engineering, Manufacturing Engineering, Research and Development, Quality Assurance, Customer Support and any other appropriate personnel deemed necessary.

Objectives of this process are to:

a) Define product functional and performance design requirements
b) Applicable regulatory or statutory requirements
c) Preclude incomplete, ambiguous or conflicting design requirements,
d) Include similar previous design and development results, and
e) Assure that all customer and regulatory requirements are identified.

Guidelines for this process are contained in formal OPs.

7.3.3 Design and development outputs

The PM is responsible for assuring that new or improved product design specifications include all the requirements developed during the input phase of the project and associated design reviews. Product

designs will be documented and product stability verified prior to release to manufacturing in accordance with OPs.

Design and development outputs shall also:

a) Meet the input requirements for design and development
b) Provide appropriate information for purchasing, production and for service provision,
c) Contain or reference product acceptance criteria, and
d) Specify the characteristics of the product that are essential for its safe and proper use.

7.3.4 Design and development review

At suitable stages, systematic reviews of design and development shall be performed in accordance with planned arrangements (see 7.3.1). Dependant on the complexity and scope of the design effort several design reviews, typically identified as Preliminary Design Review (PDR) or Critical Design Review (CDR) may be held to:

a) to evaluate the ability of the results of design and development to meet requirements, and
b) identify any problems and propose necessary actions,

Participants in such reviews shall include representatives of functions concerned with the design and development stage(s) being reviewed.

Records of the results of the reviews and any necessary actions shall be maintained.

7.3.5 Design and development verification

Verification shall be performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and developments outputs have met the design and development input requirements. Project Plans may also provide for prototype testing, beta site testing and extensive preproduction testing of pilot units as appropriate for product assurance.

Records of the results of the verification and any necessary actions shall be maintained (see 4.2.4).

7.3.6 Design and development validation

During this phase, tests are performed to exercise the product to verify performance characteristics. Evaluations of the product to conform to safety and other regulatory requirements will also be conducted.

The preproduction phase of product development will be conducted using manufacturing or engineering personnel and facilities. This phase remains under the control of the PM and will confirm that using standard manufacturing processes and product documentation will produce the product as intended and provide total design confidence.

Wherever practicable, validation shall be completed prior to the delivery or implementation of the product.

Records of the results of validation and any necessary actions shall be maintained (see 4.2.4).

7.3.7 Control of design and development changes

During the project development process, changes shall be reviewed, verified and validated, as appropriate, and approved before implementation. The review of design and development changes shall include evaluation of the effect of the changes on constituent parts and product already delivered. These changes will be recorded in the minutes of the design review meetings and in revisions to project and engineering documents.

The ECO procedure is used to release to Operations all necessary lower level drawings and procedures during the development phase of the project. When appropriate the product level documentation will also be deployed to manufacturing through the ECO process. After product release, changes will be controlled in accordance with the ECO OP.

Records of the results of the review of changes and any necessary actions shall be maintained (see 4.2.4).

7.4 Purchasing

The quality of SDS – Woburn manufactured products is highly dependent on the quality of purchased material and services obtained from suppliers. Therefore, supplier selection and purchased material verification are important methods of quality assurance.

7.4.1 Purchasing Process

The Purchasing Department may only purchase product components, products and services for use in production operations from approved suppliers.

Suppliers are selected based on their ability to meet specified requirements including quality, delivery, service, technology, business fit and cost. Performance information for suppliers is used to reassess and update the approval of suppliers. This reassessment is performed yearly, as a minimum, for all suppliers. The identification of approved suppliers is included in the supplier information in the purchasing MRP system.

The following methods, or others specified in applicable Operation Procedures, are used to evaluate and approve suppliers:

a) The supplier's history of supplying satisfactory products,
b) Documented survey and/or supplier capability audits,
c) Product evaluation,
d) OEM approval of OEM product distributors, and
e) The supplier produces a product that can be inspected or tested for specified attributes during the material verification processes.

7.4.2 Purchasing Information

Parts purchased for use in the production of SDS – Woburn product will be identified by a unique part number and revision, which is assigned by the Documentation Control Department.

Suppliers are provided with engineering drawings, bills of materials and/or specifications for all products utilized in SDS – Woburn designed products. If purchases of components are required by the supplier, the supplier is also provided approved source information for each component which specifies approved suppliers, manufacturers and manufacturer's part numbers for those part numbers on the bill of materials.

Purchase orders for commercial off-the-shelf hardware are identified with the manufacturer's model or part number and the SDS – Woburn unique part number when appropriate. Generally, no additional documentation is required in this case, unless a control drawing is deemed necessary by engineering.

Purchase Orders are reviewed and verified for adequacy prior to release.

7.4.3 Verification of Purchased Products

As part of its purchased part verification process, SDS- Woburn may inspect parts at the approved subcontractor's facility. Formal Operating Procedures control and govern this process.

Where specified in a customer contract, customers or their representatives will be afforded the right to verify that items purchased by SDS – Woburn conform to contractually specified requirements.

Should a customer require that this activity be extended to the premises of a subcontractor, purchasing will make the necessary arrangements.

Verification of purchased material by the customer will not be used by SDS – Woburn as evidence of effective control of quality by the vendor

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

The processes that directly affect product quality will be planned and controlled. Manufacturing Engineering, Production, Customer Support, and Quality Management are responsible for ensuring that documentation is available for all processes and equipment where its absence would adversely impact product quality. The following types of documents are used, as appropriate, for process control:

a) Operating Procedures (OPs),
b) Assembly Procedures,
c) Test Procedures,
d) Engineering Drawings and Bills of Materials,
e) Workmanship Guidelines,
f) Installation, Maintenance and Service Manuals.

Manufacturing Engineering, Production, Customer Support, and Quality Management must monitor process and product characteristics, as well as initiate effective corrective or preventive action when appropriate. Management must verify that applicable documents are being used and understood and that operators are qualified to perform their assigned tasks.

The Customer Support Organization provides the customer with operational and technical assistance throughout the pre-installation, installation and subsequent support of SDS – Woburn products.

The assistance provided includes, but is not solely limited to:

a) Installation site review, planning and guidance,
b) System Operational training,
c) System Technical Support training,
d) Recommended spare parts listings,
e) Sales of requested spare parts,
f) Telephone availability for system operational concerns, during normal business hours, and
g) Material return service using a returned material authorization procedure.

Customer Support also maintains a service history file for the installed base of SDS – Woburn's products, which includes system configuration information and all services provided.

7.5.2 Validation of Processes for Production and Service Provision

Validation demonstrates the ability of the processes to achieve planned results. SDS - Woburn validates any production and service processes where the resulting output cannot be verified by subsequent measurement or monitoring. Defined arrangements for validation include the following, as applicable:

a) Defined criteria for review and approval of the processes,
b) Approval of equipment and qualification of personnel,
c) Use of defined methodologies and procedures,
d) Requirements for records, and
e) Re-validation.

Electrostatic Discharge (ESD) control is an important example of a special process requiring appropriate personnel training, proper equipment and records of compliance.

7.5.3 Identification & Traceability

All material used to produce product will be controlled to provide for identification and traceability using part, Date Codes and/or serial numbers, as appropriate, during production, delivery and installation. The methods used shall be documented in Operating Procedures that include provisions for clearly indicating inspection and/or test status of subassemblies, finished goods and systems.

All assemblies in the production area are to be identified by:

a) Part number,
b) Revision, and
c) Assembly and test status

All material in the stock locations will be identified by unique part numbers.
Shippable systems, workstations, and major assemblies are to be identified by serial number.

Product inspection and test status are clearly defined and carried out in accordance with Operating Procedures, Assembly, Procedures, and Test Procedures. These specify the methods used for inspecting and testing of purchased material, in-house manufactured products and for contract assembly supplied materials.

a) Incoming materials will be clearly identified and segregated from accepted material to prevent commingling pending the determination of their conformance to documented requirements,

b) Stockroom locations for conforming and non-conforming materials are maintained as separate controlled areas,

c) Assemblies fabricated in-house are identified with tracking tags indicating inspection and test status.

Records of material transactions are to be recorded and maintained on file.

7.5.4 Customer Property

Care will be exercised while customer property is under control or being used by SDS - Woburn Material Management will identify, verify, protect and maintain customer property (including intellectual property given in confidence) provided for use or incorporation into the product.

In the event this is required by special contract circumstances – it will be handled per the specific OP used to control it's processing. The OP, as a minimum, addresses the following requirements:

a) Examination upon receipt, when practical, to detect damage in transit,

b) Inspection for completeness and proper type,

c) Periodic inspection and precautions to assure adequate storage conditions and to guard against damage from handling and deterioration during storage,

d) Functional testing to determine satisfactory operation, prior to or after installation, or both, if required by the contract,

e) Verification of quantity,

f) Any loss, damage, or condition that makes the material unsuitable for use will be recorded and reported to the customer.

7.5.5 Preservation of Product

SDS - Woburn preserves product conformity to customer requirements during internal processing and delivery to the intended destination. This includes identification, handling, packaging, storage and protection and applies to the constituent parts of a product.

These procedures include requirements for protecting product and their constituent parts from the following;

a) Electrostatic discharge damage,

b) Obsolescence, through Stock rotation methods while in stock locations,

c) Appearance defects and mechanical damage, and

d) Defective Packaging.

To assure delivered product meets their intended performance, appearance, and delivery criteria to fulfill customer requirements.

7.6 Control of Measuring and Monitoring Devices

Inspection, Measuring and Test Equipment is utilized to provide accurate and reliable assessment of process and product characteristics. This equipment is selected by Engineering staff, functional managers and supervisors who are qualified to determine acceptable selection of equipment.

Operating Procedures have been established to ensure that all equipment used for the acceptance or rejection of product design criteria or customer deliverable product is maintained at the required level of accuracy. Test and inspection equipment is identified and calibrated in accordance with an established schedule. Calibration standards are traceable to the National Institute of Standards and Technology (NIST) or other recognized national or international standards. Corrective action is required for products that may have been accepted with malfunctioning manufacturing test equipment where the safety, functionality or reliability of the product is in doubt.

Software used for measuring and monitoring of specified requirements is validated prior to use.

Records including calibration certificates are maintained on file by.

Supporting OP Documents

See Level II, Product Realization Macro Flowchart OP, 8301-10000-07

(8) MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.1 General

SDS - Woburn defines, plans and implements the measurement and monitoring activities needed to assure conformity of the product and BQMS and achieve continuous improvement. This includes the determination of the need for, and use of, applicable methodologies including statistical techniques. And when statistical techniques are requested as the basis for decision-making, the method will be documented in an Operating Procedure and employees will be trained in its use.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

SDS - Woburn monitors information on customer satisfaction and/or dissatisfaction as one of the measurements of performance of the quality **management** system. The methodologies for obtaining and using this information are described in **Measurement, Analysis and Improvement** Macro Flowchart OP, 8301-10000-08

8.2.2 Internal Audit

Internal Quality Audits (IQA) are performed in accordance with established operating procedures and are undertaken to verify compliance with established company policies and procedures that affect the overall quality of products and service. With the cooperation and input of all departments, the IQA program strives to identify and address areas in need of improvement and initiate corrective action if required. Another critical output of the IQA process is the identification and implementation of continuous

improvement opportunities. These activities are planned and executed to also sustain ISO 9000 registration and provide a method for continual improvement of processes and documentation.

An IQA is defined by the International Standards Operation as "a systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives." In other words, the IQA is one of the most powerful tools within SDS – Woburn in helping to achieve bottom-line results.

The IQA program consists of system and product audits carried out by individual or teams authorized by the Quality Assurance Management. Auditors must be independent of the area they are auditing and have appropriate training or experience. Specifically, IQA's will be designed and performed to accomplish the following:

1. Verify that the Quality System is operating as defined in ISO 9001, this Manual and applicable Operating Procedures;
2. Monitor the existing Quality System for adequacy in achieving quality objectives and verifying that objectives are being met;
3. Identify and implement process and product improvement action;
4. Monitor in-process products for compliance with applicable regulatory requirements, special customer requirements and applicable company documents.

The IQAs are conducted in accordance with detailed Operating Procedures. This procedure includes a plan to cover the primary quality system elements which takes into consideration the status and importance of the processes and areas to be audited as well as the results of previous audits. A schedule for each area to be audited will be published listing each area and the time frame for the IQA. Provision will be made for management review and approval of completed corrective actions and an escalation procedure to involve higher management, if necessary, to ensure timely, effective and appropriate action.

IQA reports will be issued to the auditee, appropriate individuals, the ISO Management Representative and will also be retained as a record of the IQA .

8.2.3 Measurement and Monitoring of Processes

SDS - Woburn applies suitable methods for measurement and monitoring of those realization processes necessary to meet customer requirements. These methods confirm the continuing ability of each process to satisfy its intended purpose.

8.2.4 Measurement and Monitoring of Product

Receiving Inspection and Testing:
All purchased material and products from vendors are process in accordance with inspection plans specified in Operating Procedures. In determining the amount and nature of Receiving and Incoming Inspection, consideration is given to the:

a) Complexity and criticality of the product,

b) Control exercised at the source, and

c) Supplier's history of quality conformance for the part provided.

The OPs for the Receiving and Incoming Inspection areas are comprehensive and provide adequate instructions for verification and acceptance of all material. These procedures reference inspection and testing requirements, sampling plans, vendor history records, data collection processes and control of non-conforming product.

In cases were inspection or testing has been waived for urgent production requirements, a record will be made and the material identified and tracked to permit recall and replacement in the event of non-conformance to specified requirements.

In-process Inspection and Testing:
Qualified personnel perform in-process inspections according to documented instructions. Test procedures specify in detail the test methods, equipment used and any reference documents required. Test procedures are prepared for functional assemblies and systems. Engineering drawings are the primary source of inspection information for assemblies. Self-inspection by qualified personnel is permitted. OPs specifies the requirements for appropriate records of inspections and test.

Final Inspection and Testing must be performed on all products delivered to customers to ensure that products meet all applicable specifications. Final inspection must be performed on these products to verify configuration, workmanship, appearance, order completeness, functionality and compliance with regulatory requirements where applicable. Test and inspections must be performed in accordance with controlled procedures.

Records of inspections and tests are maintained on file and indicate who authorized product release. These records include incoming inspection data, subassembly records and Quality Assurance final test results.

8.3 Control of NonConforming Product

SDS - Woburn ensures that product which does not conform to requirements is identified and controlled to prevent unintended use or delivery. These activities are defined in documented OP's.
A Material Review Board (MRB) has been established and meets on a regular basis to disposition non-conforming material. The MRB initiates corrective action to prevent recurrence of discrepancies. Nonconforming product that is corrected is subject to re-verification after correction to demonstrate conformity.

When contractually required, customer approval will be obtained prior to delivery of product that has been accepted by the MRB, but does not fully conform to exact specified requirements. When nonconforming product is detected after delivery or use has started, SDS - Woburn takes appropriate action regarding the consequences of the nonconformity.

Records are maintained of all Material Review Decisions.

8.4 Analysis of Data

SDS - Woburn collects and analyzes appropriate data to determine the suitability and effectiveness of the quality management system and to identify improvements that can be made. This includes data generated by measuring and monitoring activities and other relevant sources.

SDS - Woburn analyzes this data to provide information on:

a) Performance of suppliers and subcontractors.
b) Conformance to internal customer requirements,
c) Conformance to customer requirements,
d) Characteristics of processes, product and their trends, and
e) Customer satisfaction and/or dissatisfaction.

8.5 Improvement

8.5.1 Continual Improvement

SDS - Woburn plans and manages the processes necessary for the continual improvement of the quality management system. SDS - Woburn facilitates the continual improvement of the quality management system through the use of the quality policy, objectives, audit results, analysis of data, corrective and preventive action and management review.

The following activities may be included as input for corrective and preventive actions:

a) Purchased material data collection;
b) In-process defect data collection;
c) Analysis of data;
d) Vendor corrective action;
e) Quality Alerts;
f) Corrective action as a result of field reports;
g) Customer comments or complaints;
h) Internal corrective action;
i) Final product inspection and testing;
j) Quality Audits.

8.5.2 Corrective Action

SDS - Woburn takes corrective action to eliminate the cause of nonconformities in order to prevent recurrence. Corrective action is to be appropriate to the impact of the problems encountered.

The documented OP's for corrective action defines requirements for:

a) Identifying nonconformities (including customer complaints),
b) Determining the root causes of nonconformity,
c) Evaluating the need for actions to ensure that nonconformities do not recur,
d) Determining and implementing the corrective action needed,
e) Recording results of action taken, and
f) Reviewing of corrective action taken.

8.5.3 Preventive Action

SDS - Woburn implements preventive action to eliminate the causes of potential nonconformities to prevent occurrence. Preventive actions taken are appropriate to the impact of the potential problems.

The documented OP for preventive action defines requirements for:

a) Identifying potential nonconformities and their causes,
b) Evaluation of the need for action to prevent occurrences of nonconformities,
c) Determining and ensuring the implementation of preventive action needed,
d) Recording results of action taken,
e) Reviewing preventive action taken.

Operating Procedures provide an appropriate level of action based on quality risk.

Supporting OP Documents

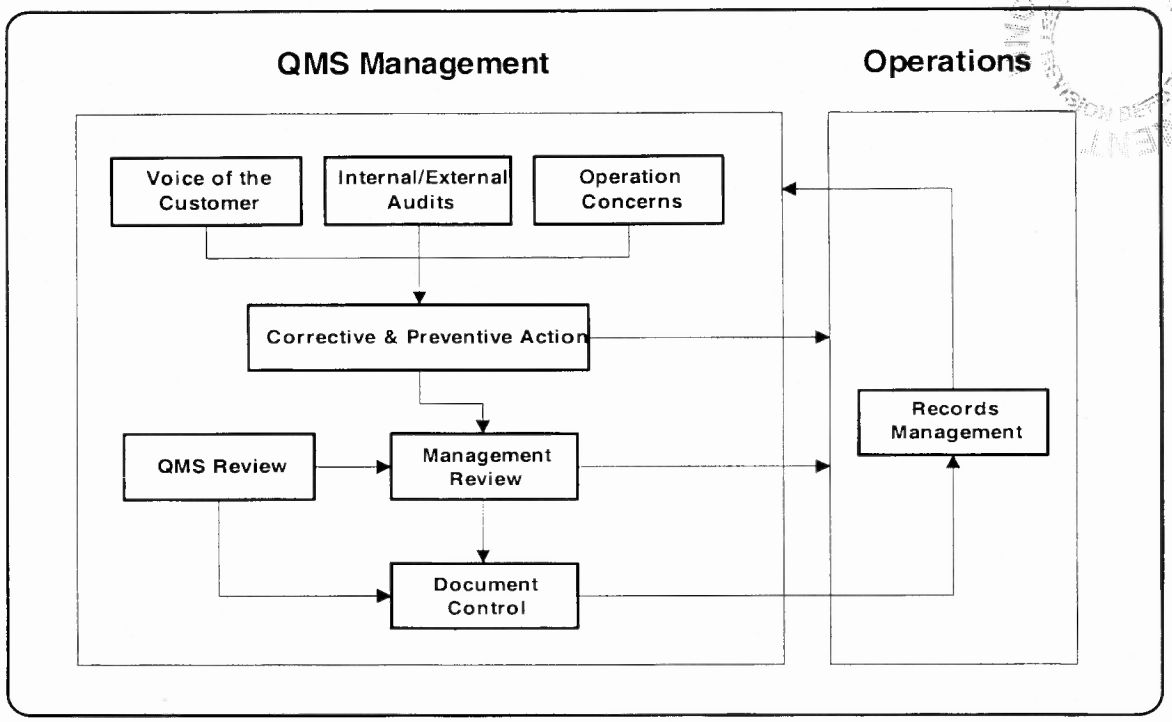
See Level II, Measurement Analysis and Improvement Macro Flowchart OP, 8301-10000-08

9a. Quality Management System
[Interactions]

The SDS - Woburn Quality Management System are processes that work in harmony to communicate, drive, fix and implement the business objectives, priorities, customer issues and operational problems. The components of these processes are (Clause 8) Voice of the Customer, Internal/External Audits, Operations Concerns [including Control of Nonconforming product], Preventive/Corrective Action and (Clause 5) Management Review.

These management processes are implemented using the associated (Clause 4) Document and Record Control processes so that changes are communicated to all affected employees.

Note: All of these processes and corresponding procedures (in flowchart format) can be found in the Level 2 Flowcharts and all are designed to work together to enhance Total Customer Satisfaction.



9b. Quality Management System Goals and Objectives

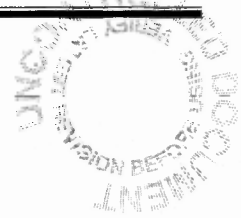
1. Ensure the Business Management System [BMS] is implemented in SDS - Woburn to support the goals and objectives of the respective areas.

2. Provide a means for the BMS to be reviewed at least annually.

3. Enhance the tools used for SDS - Woburn employee development via ensuring that adequate resource planning and training opportunities are available to support personnel performing work affecting product quality. Records of the training will be maintained in conjunction with the annual reviews. This will enhance SDS - Woburn product and services and provide for full customer satisfaction.

4. Ensure continued compliance with the ISO 9001:2000 standard and associated SDS - Woburn policy and procedures using Management Responsibility to implement the quality policy and established goals and objectives.

5. Actively measure, analyze and improve SDS - Woburn processes. Seek customer satisfaction and dissatisfaction measures so that improvement can be achieved as perceived by SDS - Woburn customers. Key performance indicators will be central to the measurement in addition to customer surveys.



10. Quality Manual Revision History

REV.	ECO #	Appr.	DESCRIPTION OF CHANGE
A0	2784	JRP	Initial Release

7 Reliability Projection Report

Given the rapid evolution of the system design, and the relative short operational history of the current configurations, there is not enough field logistics data for these exact designs to make statistically accurate projections. L-3 has estimated readiness figures based on performance of similar systems, the complexity of design, and the deviation from established systems. It is expected that the CX-6000R will be the most reliable, followed by the CX-3800G, and then the CX-3800M. The operational availability of the 3800M should be comparable to the Dutch truck.

Using a conservative approach, L-3 would predict operational readiness for all three systems using the system with the lowest predicted reliability, the Mobile system. It is estimated that the CX-series will have an overall availability of [redacted]

Data from the CX-2500M points to monthly averages as follows:

[redacted]

(b)(4); (b)(7)(E)