

L-3 COMMUNICATIONS, DATRON ADVANCED TECHNOLOGIES CAPABILITIES PRESENTATION 2013



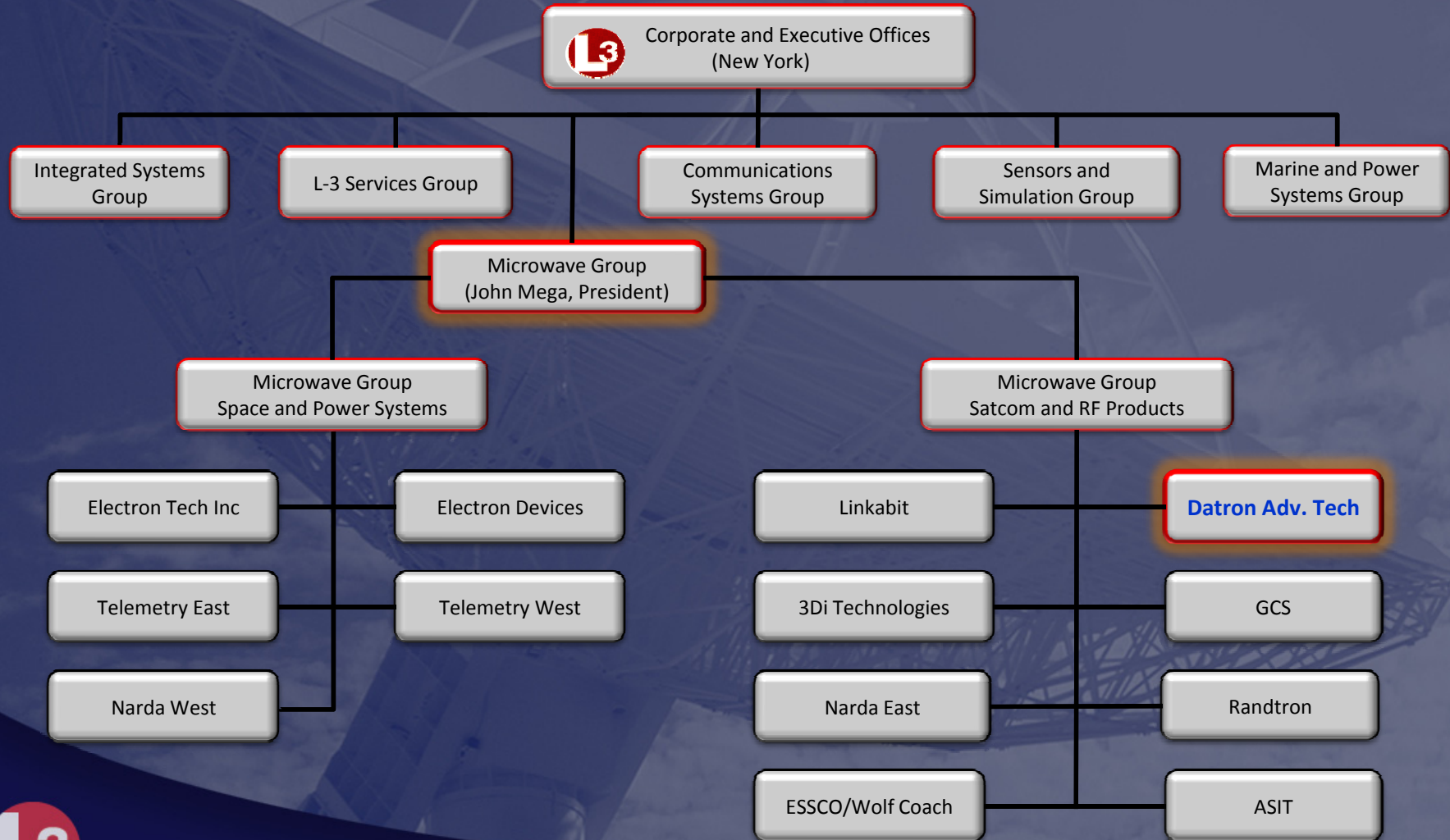
This presentation consists of L-3 Communications, Datron Advanced Technologies Division general capabilities information that does not contain controlled technical data as defined within the International Traffic in Arms (ITAR) Part 120.10 or Export Administration Regulations (EAR) Part 734.7-11

Welcome

L-3 Communications, Datron Advanced Technologies
200 West Los Angeles Avenue
Simi Valley, CA 93065-1650



A Member of L-3 Communication's Microwave Group



Datron's Heritage

Since 1969 Datron has Designed, Manufactured and Integrated Satellite Remote Sensing Systems, Communications terminals, TT&C and Telemetry Systems for Airborne, Shipboard, Strategic, and Tactical Environments.



- Global Presence with Installations on Every Continent – over 100 Countries
- 9-acre Facility in Simi Valley Hosts 110,000 sq. ft. Purpose Built Facility
- 125+ Employees; 40% Engineering, 30% Manufacturing, 30% Admin/Marketing
- Quality Management System ISO 9001-2008 Certified



Products Built to Last

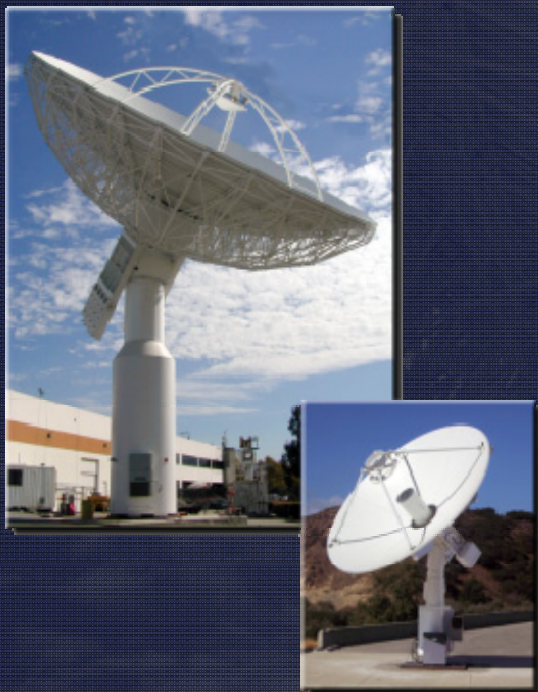


- Celebrating **over 40 Years** of Success Supplying Full Motion Antenna Solutions to the Worldwide Scientific Industry and Governments
- **Successful Legacy** Supplying Antenna for:
 - Remote Sensing & TT&C, Communications, Telemetry, (Fixed Site and Transportable Configurations)
 - Airborne, Shipboard, Comm-on-the-Move
- **Known for Reliability and Long Service Life**
 - Datron Products Are Known for Robust Designs making them ideal for:
 - **Fixed Site** – Extreme climates from the arctic circle to equatorial tropics
 - **Mobile / Tactical / Transportable** – Harsh shock / vibration and temperature cycles
 - **Shipboard** – Extreme sea states, harsh shock, and corrosive environments
 - **Airborne** – Extreme vibration, temperature, and corrosive environments

Our Core Products Include:

Full Motion Antennas

for Telemetry Tracking & Control (TT&C), SATCOM, Remote Sensing Applications



Robust products that yield long life and low life cycle costs

Communications On The Move (COTM)

for broadband SATCOM applications



X/Ku/Ka-Band SATCOM for OTM command and control applications

Airborne Systems

for Ku- Band communications for domestic and international TV service, internet service



DBS and Broadband low profile antennas deliver lower in flight fuel costs due to low aerodynamic drag



Full Motion Antennas — *(Fixed Site)*

Configurations
Range in Size from
2.4m to 20m



Large Aperture Antennas
For Remote Sensing



Telemetry
Tracking & Control



Multi-Band
Systems



Telemetry
Systems

Surveillance
and Flight
Termination
Systems



Optical
Terminals



Full Motion Antennas – (Mobile)



Calibration Systems



*Emergency
Back-up
Systems*



*Transportable Remote
Sensing Ground
Stations*



*Transportable
Flight Termination*

*Transportable
Surveillance Systems*



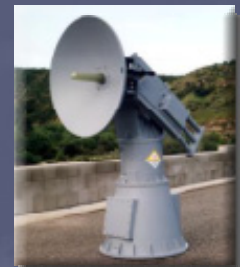
- Turnkey Mobile Ground Stations
- Shelterized Operations
- Rapid Deployment
- Tactical Missions



Full Motion Antennas – (Shipboard)

- OE-82()/WSC and Navy EHF SATCOM Program (NESP) Satellite Communications Antennas Found on Every U.S. Surface Ship (Low PIM Requirement)
- 30 ft “Redstone” Used for Offshore Tracking of U.S Space Missions
- Common High Bandwidth Data Link (CHBDL-ST)
- Navy Ship and Shore EHF Antenna Systems
- Shipboard Multi-Frequency Surveillance Systems

Common High-Bandwidth Data Link



Shipboard EHF Communication



Shipboard Telemetry Trackers



Shipboard Surveillance



Navy UHF Comm-Link



Communications-On-The-Move

- Aperture options include: 16 in (41 cm), 18 in (46 cm) and 20 in (51 cm)
- A Family of COTM Antennas for Multiple Missions
 - Supports 2-way VoIP, data and streaming video
 - Available 2-axis and 3-axis pedestals
 - Supports X, Ku and Ka frequency bands on a common pedestal
 - Direct-drive motors and resolvers on all axis, no gears or belts to wear out
 - Qualified per MIL-STD-810F
 - A combat proven vehicle mounted earth station (VMES) adaptable to airborne and shipboard platforms
- System includes: BUC, SSPA and Antenna Control Unit (ACU)
- All COTM antennas are modem agnostic

FSS-4180-3, FSS-4160-2

**FSS-4180-LC
3 and 2-axis
Antennas**



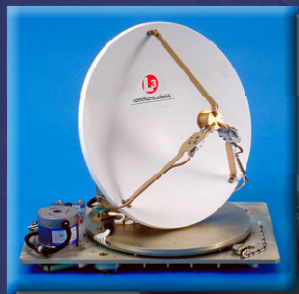
Examples of COTM ground mobile and airborne installations

"Cleared by DoD/OSR for Public Release Under OSR Case No. 09-S-1030, on March 13, 2009."



Airborne Terminals

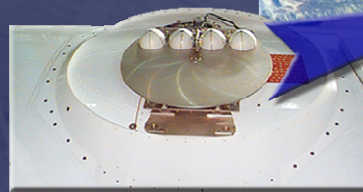
- First Flight-Certified Systems Operational on Commercial Airline (1996), Business Jets (1997), and Military GBS (1999)
- Suitable for Ka- / Ku- / V-Band Applications
- Good Market Share In-Flight, DBS TV
- Transmit / Receive Terminals
- Global Operations



DBS-2100



**Patented Luneburg Lens
Technology for Ku- and Ka-Band**



**FSS-2402 Transmit /
Receive Antenna System**



DBS-2130

**Serving Military,
Commercial and
Business Aviation Markets**



Quick Erect / Flyaway Terminals

- **Flyaway 2.44m Antenna System**

- Multi-Band (S/C/ X/Ku/Ka - Band) capability
- Rapid Assembly - < 15 minutes
- Field proven – over 250 delivered to date
- Small Stowed form factor
- Ruggedized full Mil Spec'd equipment

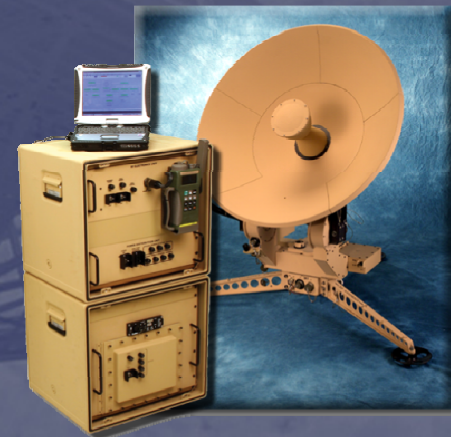


ALTA Flyaway Terminal

- **Quick Erect 0.9m Ka-Band Terminal (KaSAT)**

- Automatic Acquisition of the satellite in less than 1 minute. Full operation within 5 minutes
- Transit Case or Shelter Mounted Variants
- Ruggedized full Mil Spec'd equipment for DoD Communications on the Pause or on the Quick Halt

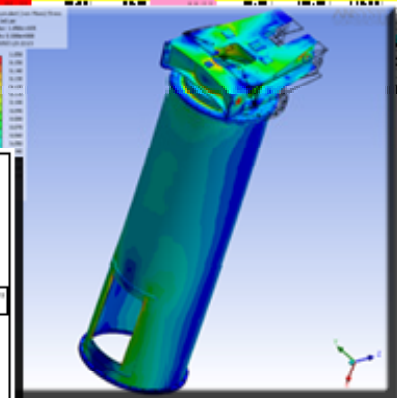
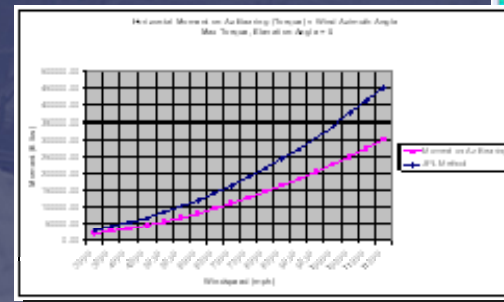
***Ka-SAT Terminal
COTP / COTQH***



Engineering Resources

Strong Engineering Capacity for Design and Development

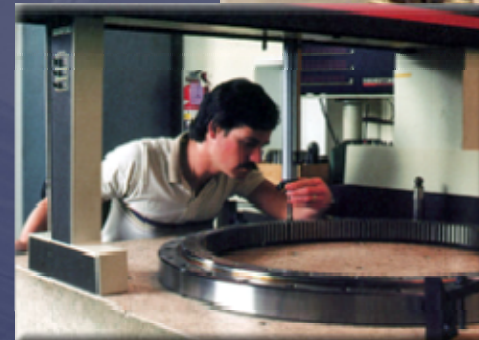
- **Key Engineering Disciplines**
 - Systems Design
 - Microwave
 - Mechanical
 - Electrical / Controls Systems
 - Real-Time Software/Firmware
- **Complete Suite of Developmental Tools**
 - CAD / CAM
 - Solid Works
 - 3-D Modeling
 - Finite Analysis
 - RF Simulation
 - Schematic Capture
 - S/W Development
 - Orbital Analysis / Modeling
 - Dynamic Simulation1

A large spreadsheet or data table with multiple columns and rows of numerical data. The table is organized into several sections, with some rows highlighted in yellow and others in blue. It appears to be a detailed technical or financial report.

Manufacturing and Test Facilities — *(Indoor)*

Indoor Assembly and Test Facilities

- **Quality Control**
 - Subassembly and Incoming Inspection
 - Large Assembly Inspection area
- **Mechanical Assembly Area**
 - Prototype Machine Shop
 - 9,000-sq-ft Sub-assembly Integration
 - Surface treatment and Paint
 - 10,000 sq-ft Open and Job Stock
 - Shipping and Receiving
- **Precision Assembly Area**
 - 6,500 sq-ft Electronic Sub-assembly
 - Small Subassembly area
- **Integration and Test Areas**
 - Subassembly Testing
 - RF and Anechoic Chambers
 - Environmental Testing



Manufacturing and Test Facilities – (Outdoor)

Outdoor Assembly and Test

- Located in a RF Clean Area of Ventura County
- Three Far Field RF Test Ranges – 250 ft, 1850 ft and 9000 ft
- Pattern and Special Feed Test Area
- Weather Suited for Year Round Access
- Assembly / Test Pads Supports Up to Five 13m & Two 5m Builds Simultaneously
- Test Pads Capable of 18m Antenna Testing
- Two Large Reflector Assembly and Alignment Pads
- International and Domestic Power Available at Each Pad
- Remote environmentally controlled test building available



Why Work With L-3 Datron So Closely?

- **L-3 Datron hardware is known for longevity and reliability...**
systems delivered in the mid-70's are still operational in the northern latitudes taking over 20 passes a day
- **L-3 Datron delivers to our customer what it signs up for**
 - Our business is antenna subsystems and we understand requirements
 - We take a conservative design approach
 - If a program is underbid we complete the program without asking for additional funding..... we play fair!
 - We do not have a not-invented-here mentality and are open to outside approaches and desires
 - We take pride in the hardware we deliver
 - Our goal is to always deliver a product that will please the customer in the end

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