The Business of Aerospace and Defense

May 2011

Ed Morris
Director, Mechanical Engineering and Manufacturing
Corporate Engineering & Technology
Goal

Foster Informed Discussion of the Business Aspects of the Aerospace and Defense Industry
Agenda

• Business Principles
• A&D Evolution
• A&D Contributions
• A&D Unique Characteristics
• Defense Contracting Considerations
• Summary
Business Principles
What All Businesses Have in Common

• Capacity to Produce
  – Employees and Facilities
• Opportunity to Sell
  – Customers and Markets
• Access to Capital
  – Lending Institutions and Shareholders

Stakeholders’ Values Drive Business
What All Successful Businesses Have in Common

• Effective Business Rhythms
  – Strategy for Success and Determination to Execute It

• Strong Cash Flow
  – Processes Enabling Financing, Sales, Execution, and Collection

• Prudent Risk Management

• Reasonable Shareholder Returns
Financial Flow

Order

Backlog

Development, Production & Delivery

Sales

Minus Cost of Sales

Operating Profit

Minus Interest and Taxes

Net Earnings

Divide by # of Shares

Earnings Per Share
A&D Evolution
Defense Industry Evolution

Defense Spending as % of GDP

WWI 1930
12/07/41 WWII 1950 Cold War
Korea 1960 Vietnam
Berlin Wall 1980 Desert Storm
9/11/01

Defense Industry was Formed from Threats to National Security and Needs for Technological Investments

Chart Source: Lexington Institute
A&D Industry Consolidation

Reduced Demand and Market Forces Reshaped the Primes
Defense Systems Procured

Aircraft Procurement

Ship Procurement

Missile Procurement

Helicopter Procurement

Source: DoD Procurement Programs P-1
Primes are Adapting to Changing Market Demands
A&D Industry Supports Global Security

Solutions for the Entire Spectrum of Engagement
Three-Tiered Global A&D Industry

- 30,000+ Subsystems and materials suppliers
- Includes small, minority-owned and disadvantaged businesses (20,000+)
- Includes commercial companies
- Network of use extends to additional suppliers

60 to 75% of Work Subcontracted
A&D Contributions
A&D Workforce Contributions

(Aerial View Workforce Study)

Workforce Age Distribution
- Under 35: 23%
- 35-49: 38%
- Over 50: 39%

Hundreds of Thousands of Jobs

Eligible to Retire by 2013
- Engineering
- Research & Development
- Manufacturing
- Program Management

(Aviation Week 2009 Workforce Study)
Over 40K A&D Jobs Lost Since 2009

Notes: Since First Quarter 2009, Actual and Announced

Plus: Layoff of 560 A&D workers in San Diego who cannot find work in the region within one year could result in the loss of 760 supplier jobs and 400 jobs related to spending cutbacks by those laid off. This could mean a total nation-wide loss of ~120,000 A&D-connected jobs since 2009. (Source: Institute for Policy Research)

WA = 6578
CA = 4458
NY = 2682
FL = 10,108
LA = 6771
Competitive Compensation (2009)

Production Workers Hourly Wage

<table>
<thead>
<tr>
<th>Sector</th>
<th>Hourly Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leisure</td>
<td>$11</td>
</tr>
<tr>
<td>Transportation</td>
<td>$16</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$18</td>
</tr>
<tr>
<td>Education</td>
<td>$19</td>
</tr>
<tr>
<td>Financial</td>
<td>$20</td>
</tr>
<tr>
<td>Professional</td>
<td>$21</td>
</tr>
<tr>
<td>Construction</td>
<td>$22</td>
</tr>
<tr>
<td>Government</td>
<td>$23</td>
</tr>
<tr>
<td>Autos</td>
<td>$31</td>
</tr>
<tr>
<td>Aerospace</td>
<td>$33</td>
</tr>
</tbody>
</table>

All Employee Annual Earning Comparisons

<table>
<thead>
<tr>
<th>Sector</th>
<th>Annual Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech</td>
<td>$84,400</td>
</tr>
<tr>
<td>A&amp;D</td>
<td>$78,904</td>
</tr>
<tr>
<td>Government</td>
<td>$74,403</td>
</tr>
<tr>
<td>Auto</td>
<td>$73,000</td>
</tr>
<tr>
<td>Financial Services</td>
<td>$56,243</td>
</tr>
<tr>
<td>Education and Health</td>
<td>$47,174</td>
</tr>
<tr>
<td>Leisure and Hospitality</td>
<td>$27,206</td>
</tr>
</tbody>
</table>

Sources: Bureau of Labor & Statistics, U.S. Census, Aerospace Industries Association, TechAmerica

(Average U.S. Salary: $38,000 per year)
Aerospace: A Leader in Net Exports

$ Millions

Source: Bureau of the Census (seasonally adjusted), Foreign Trade Division
A&D Technology Contributions

R&D Investment as a Proportion of Net Sales

- All Industry: 2.9%
- Aerospace: 13.3%

Non-Company Funded

Company Funded

(AIA, Bureau of Labor Statistics, National Science Foundation)
A&D Technology Contributions

Legacy of Innovation and Public Benefit
Superior Systems for Warfighters
A&D Unique Characteristics
A&D Industry Market Value

Aerospace & Defense Market Cap as % of S&P

<table>
<thead>
<tr>
<th>Year</th>
<th>Market Cap as % of S&amp;P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>4.2%</td>
</tr>
<tr>
<td>1970</td>
<td>3.8%</td>
</tr>
<tr>
<td>1980</td>
<td>2.4%</td>
</tr>
<tr>
<td>1990</td>
<td>1.8%</td>
</tr>
<tr>
<td>2000</td>
<td>0.9%</td>
</tr>
<tr>
<td>2009*</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

* A&D as sum of LMT, BA, NOC, RTN, GD
Industry Comparisons

Market Cap / Sales ($B)

Publicly Traded Companies on NYSE or AMEX
Sources: CNN Money, Yahoo! Finance

<table>
<thead>
<tr>
<th>Industry</th>
<th>Market Cap</th>
<th>2009 Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette Industry</td>
<td>$221</td>
<td>$77</td>
</tr>
<tr>
<td>Beer Brewers</td>
<td>$184</td>
<td>$71</td>
</tr>
<tr>
<td>Microsoft</td>
<td>$219</td>
<td>$58</td>
</tr>
<tr>
<td>Apple</td>
<td>$243</td>
<td>$43</td>
</tr>
<tr>
<td>IBM</td>
<td>$164</td>
<td>$96</td>
</tr>
<tr>
<td>HP</td>
<td>$107</td>
<td>$115</td>
</tr>
<tr>
<td>A&amp;D</td>
<td>$251</td>
<td>$180</td>
</tr>
</tbody>
</table>

Aerospace and Defense: Lockheed Martin, Boeing, Northrop Grumman, General Dynamics, Raytheon, L3, and Honeywell Corporation
Cigarette Industry: Lorillard, Reynolds American, Vector Group, Star Scientific, Altria Group, Philip Morris International, and British American Tobacco Industries
Beer Brewers: Anheuser-Busch InBev, Fomento Economico Mexicano, Companhia de Bebidas das Americas, Molson Coors Brewing Co, Compania Cervecerias Unidas, Boston Beer, and China New Borun Corporation
Gross Earnings Sector Comparisons

EBITDA Margin from 2007 – 2009

Aerospace and Defense Margins Lag Other Industries

Source: CapitalIQ Note: (1) Analysis includes publicly-traded, US-based companies with revenues >$1B in CY2008
Net Earnings as % of Revenue
Company Comparisons from Various Industries

### A&D Sector

<table>
<thead>
<tr>
<th>Company</th>
<th>Yr 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTN</td>
<td>7.8</td>
</tr>
<tr>
<td>GD</td>
<td>7.5</td>
</tr>
<tr>
<td>LMT</td>
<td>6.7</td>
</tr>
<tr>
<td>NOC</td>
<td>5.0</td>
</tr>
<tr>
<td>BA</td>
<td>1.9</td>
</tr>
</tbody>
</table>

### Other Industries

<table>
<thead>
<tr>
<th>Company</th>
<th>Yr 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merck</td>
<td>47</td>
</tr>
<tr>
<td>G’Sachs</td>
<td>30</td>
</tr>
<tr>
<td>M’Soft</td>
<td>28</td>
</tr>
<tr>
<td>Cisco</td>
<td>17</td>
</tr>
<tr>
<td>IBM</td>
<td>14</td>
</tr>
<tr>
<td>Intel</td>
<td>12</td>
</tr>
<tr>
<td>HP</td>
<td>7</td>
</tr>
</tbody>
</table>

Sources: Company Reports, Fortune, Yahoo Finance (Includes Commercial Aircraft)

Note: Recent S&P Average is 7-8%
Commercial and Defense Sectors Share Technical Skills, But Require Segmented Business Systems
## Commercial vs. Gov’t Contractors

<table>
<thead>
<tr>
<th>Commercial Business</th>
<th>Government Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Open Markets</td>
<td>• Monopsony</td>
</tr>
<tr>
<td>• Multiple Customers With Individual Transactions</td>
<td>• Single Customer Comprised of Multiple Constituencies</td>
</tr>
<tr>
<td>• Anti-trust Limits</td>
<td>• Industrial Base Policy Limits</td>
</tr>
<tr>
<td>• Price-based Business Model</td>
<td>• Cost-based Business Model</td>
</tr>
<tr>
<td>• Closed Books</td>
<td>• Truth In Negotiations Act (TINA)</td>
</tr>
<tr>
<td>• Maximize Sales</td>
<td>• Maximize Sales</td>
</tr>
<tr>
<td>• Upside/Downside Unlimited</td>
<td>• Upside/Downside Capped</td>
</tr>
<tr>
<td>• R&amp;D Investments Recouped in Production Price</td>
<td>• R&amp;D Investments Funded or Reimbursed by Government</td>
</tr>
</tbody>
</table>
# Commercial vs. Gov’t Contractors

<table>
<thead>
<tr>
<th>Commercial Business</th>
<th>Government Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Limited Government Oversight</td>
<td>• Significant Government Oversight</td>
</tr>
<tr>
<td>• Not Subject To Federal Acquisition Regs</td>
<td>• Subject To Federal Acquisition Regs</td>
</tr>
<tr>
<td>• Limited Export Control</td>
<td>• Export Licenses Required to Sell Overseas</td>
</tr>
<tr>
<td>• Multi Year Projections; Consumer Driven</td>
<td>• Annual Funding; Government Policy Driven</td>
</tr>
</tbody>
</table>
Defense Program Reductions

- B-2 Bomber
  - Programmed: 132
  - Built: 21

- Expeditionary Fighting Vehicle
  - Programmed: 1025
  - Being Built: 593

- F-22 Fighter
  - Programmed: 750
  - Being Built: 187

- DDG-1000
  - Programmed: 32
  - Being Built: 3

- V-22 Tiltrotor
  - Programmed: 913
  - Being Built: 458
Terminations for Convenience

- RAH-66 Comanche
  - $9 Billion Spent

- TSAT/TMOS
  - $10 Billion Spent

- Airborne Laser
  - $7 Billion Spent

- Future Combat System
  - $24 Billion Spent

- VH-71 Presidential Helicopter
  - $5 Billion Spent

- XM2001 Crusader
  - $2 Billion Spent
Why Invest in the A&D Industry

- Reasonable Returns on Investment
- Strong Cash Flows
- Consistent Dividend Returns
- Longer Term Business Outlook
- Sustainable Revenue Streams
- Government Indemnification from Catastrophic Risk
- Counter Cyclic to the Market
Five Year Stock Performance
(through December 31, 2009)

General Dynamics 30%
Raytheon 33%
S&P 500 -8%
Boeing 5%
Lockheed Martin 36%
Dow Jones -3%
S&P A&D 24%
NASDAQ 4%
Northrop Grumman 3%
S&P 500 -8%
Defense Contracting Considerations
# Government vs. Industry View of Profit

## Government Perspective

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Allowable Cost</td>
<td>$9,000,000</td>
</tr>
<tr>
<td>Profit/Fee @ 12%</td>
<td>$1,080,000</td>
</tr>
<tr>
<td>Price</td>
<td>$10,080,000</td>
</tr>
<tr>
<td>Return on Sales</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

## Industry Perspective

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Allowable Cost</td>
<td>($9,000,000)</td>
</tr>
<tr>
<td>Unallowable Cost @ 3% of Sales</td>
<td>($310,500)</td>
</tr>
<tr>
<td>Earnings Before Taxes</td>
<td>769,500</td>
</tr>
<tr>
<td>Income Taxes @ 35%</td>
<td>($269,325)</td>
</tr>
<tr>
<td>Net Income</td>
<td>$500,175</td>
</tr>
<tr>
<td>Net Income as % of Sales</td>
<td>4.96%</td>
</tr>
</tbody>
</table>

**How 12% Yields 4.96%**
Net Lockheed Martin 2009 Sales $45.2B

Cost of Sales Includes:
- Subcontracts
- Direct Labor and Travel
- Materials and Distribution
- Amortized Property, Plant & Equipment
- IRAD
- Bid and Proposal
- Unallowable Compensation
- Charitable Contributions

Net Earnings

Interest and Taxes

Revenue Distribution
Cash Deployment

- **Dividends:** Return to Shareholders
- **Share Repurchase:** Return to Shareholders

**Internal Investment**
- Capital Expenditures (Property, Plant & Equipment)
- Working Capital (Inventory, Accounts Receivable / Payable)
- Pensions

**Debt Retirement**
- Return to Creditors

**Acquisitions**
- Increase Capabilities and Capacities

**Supports All Stakeholders**
Summary
A&D Industry’s Unique Role

GOVERNMENT

SECURITY & SERVICES

PRIVATE SECTOR

TAXES

SOLUTIONS

REVENUES

RETURNS

CAPITAL & TALENT

AEROSPACE AND DEFENSE INDUSTRY

Translating Private Sector Resources into Public Sector Solutions
A Healthy Defense Industrial Base

- Supports Investment
  - Research and Development
  - Facilities and Infrastructure
- Creates and Protects American Jobs
- Is a Major Exporter
- Attracts and Retains Top-Tier Talent
- Promotes American Technology Preeminence
- Enables a Stable Partner for a Long Cycle of Business
- Enhances Allied Political, Military and Industrial Partnerships

Stability Supports an Industrial Base that Can Respond to Tomorrow’s Challenges