

DON'T BANK ON THE BOMB

A Global Report on the Financing of Nuclear Weapons Producers



Nuclear Weapon Producers
November 2015



Utrecht, November 2015

PAX has strived to achieve the highest level of accuracy in reporting. However, at this point, there is still a marked lack of official information available in the public domain about the use, production, transfer and stockpiling of nuclear weapons, as well as about investments in companies that produce nuclear weapons. The information in this report therefore reflects official information available in the public domain known to PAX. We welcome comments, clarifications, and corrections from governments, companies, financial institutions and others, in the spirit of dialogue, and in the common search for accurate and reliable information on this important subject. If you believe you have found an inaccuracy in our report, or if you can provide additional information, please contact us: snyder@paxforpeace.nl or vanderzeijden@paxforpeace.nl

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About PAX

PAX means peace. Together with people in conflict areas and concerned citizens worldwide, PAX works to build just and peaceful societies across the globe. PAX brings together people who have the courage to stand for peace. Everyone who believes in peace can contribute. We believe that all these steps, whether small or large, truly matter and will contribute to a just and peaceful world. www.paxforpeace.nl

About ICAN

ICAN is a global campaign coalition working to mobilize people in all countries to inspire, persuade and pressure their governments to initiate and support negotiations for a treaty banning nuclear weapons. ICAN is comprised of more than 400 partner organisations in over 95 countries. More information about ICAN can be found at: www.ICANw.org

About Profundo

Profundo is an economic research consultancy analysing commodity chains, financial institutions and corporate social responsibility issues. It works predominantly for environmental, human rights and development organisations in the Netherlands and abroad. www.profundo.nl

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Introduction

Every nuclear armed country is investing in the modernisation of their nuclear arsenals. In France, India, the United Kingdom and the United States some private companies are contracted to produce key components necessary to carry out this modernisation work. This report profiles companies that produce key components or services required to maintain and modernise nuclear arsenals.

The companies described in this chapter are involved in the nuclear weapons programmes of France, India, the United Kingdom and the United States and are themselves based in France, Germany, India, Italy, the Netherlands, the United Kingdom and the United States.

In other nuclear-armed countries – China, the Democratic People’s Republic of Korea (North Korea), Israel, Pakistan and the Russian Federation, – the maintenance and modernisation of nuclear forces is carried out primarily or exclusively by government agencies.

The nuclear weapons producers in this chapter were selected on the basis of a predetermined set of criteria.

- Information on investments is publicly available.
- The company is directly involved in the development, testing, production, maintenance or trade of nuclear weapons related technology, parts, products or services.
- The company’s involvement is related to warheads, or to delivery systems such as missiles, that are specifically developed for nuclear tasks. This includes technology that is designed for ‘dual use’ (military and civilian) but excludes technology that is not designed for, but can be used in nuclear warfare. It does not include delivery platforms such as bombers and submarines.

This report makes a distinction between ‘delivery systems’ and ‘delivery platforms’. In this report delivery systems (missiles, rockets, missile torpedo launch installations, etc) are considered key components of nuclear arsenals. Whereas, delivery platforms (submarines, bombers, fighter planes, etc) are excluded. This is in order to maintain methodological consistency. We believe that any definition has its own debatable grey areas, this definition sets a clear boundary allowing for its consistent application. It is important to note that some of the companies listed are involved in numerous activities related to the production of nuclear weapons and this chapter may provide information on their wider involvement, which could include both delivery systems and platforms.

Based on these criteria, a list of companies involved in producing or maintaining nuclear weapons or significant, specific components thereof was composed, using websites and annual reports of military companies; military and government sources; research reports; trade magazines and general press reports. The companies are based in the United States, Europe and India. Besides a company’s involvement in the production of nuclear weapons, the selection further considered the likelihood that the company is predominantly financed by financial institutions. Most of the included companies are therefore stock-exchange listed.

The resulting list of companies compiled in this report is not exhaustive. It is an attempt to identify the privately owned companies that are most involved in the nuclear weapon industrial complex. There are numerous other companies involved on a different scale or more indirectly. For example, companies involved in the production of small parts used in the assembly or maintenance of nuclear devices. In that sense, it is important to note that the total involvement of financial institutions in the nuclear weapons industry is much larger than what is identified in this report.

State owned or controlled nuclear industries are also outside the scope of this research, as are companies not publicly listed. Our research uncovered a number of Universities involved in nuclear weapons programmes, but these are also outside the scope of the report. The financing of nuclear programmes in China, Israel, the Democratic People’s Republic of Korea (North Korea), Pakistan and the Russian Federation remain largely invisible.

The initial list of nuclear weapons producers investigated was compiled through a wide variety of sources, including financial institution exclusion lists, civil society reports, media reports, etc. We welcome information at any time about possible nuclear weapons producing companies to investigate.

Quick guide: Which companies in this report are involved in which arsenals?

France: Airbus Group (the Netherlands), BAE Systems (United Kingdom), Finmeccanica (Italy), Safran (France), and Thales (France).

India: Larsen & Toubro (India), Walchandnagar Industries (India)

United Kingdom: Aerojet Rocketdyne (United States), BAE Systems (United Kingdom), Boeing (United States), General Dynamics (United States), Honeywell International (United States), Jacobs Engineering (United States), Lockheed Martin (United States), Moog (United States), Northrop Grumman (United States), Orbital ATK (United States), and Serco (United Kingdom)

United States: Aecom (United States), Aerojet Rocketdyne (United States), Babcock & Wilcox (United States), BAE Systems (United Kingdom), Bechtel (United States), Boeing (United States), Engility (formerly TASC, United States), Finmeccanica (Italy), Fluor (United States), General Dynamics (United States), Honeywell International (United States), Huntington Ingalls Industries (United States), Lockheed Martin (United States), Moog (United States), Northrop Grumman (United States), Orbital ATK (United States), Raytheon (United States), and Textron (United States).

Changes from previous reports

The first report was launched in 2012 and included 20 nuclear weapons producers. That number was expanded to 27 in 2013, through additional research and information gathering 28 companies were included in 2014 and the 2015 report includes 26 companies.

The list of companies in 2015 looks different from the 2014 list, as some companies have merged or changed names. ATK is now part of Orbital ATK. URS has been acquired by Aecom. Gencorp is now operating under the name Aerojet Rocketdyne. TASC has been acquired by Engility Holdings.

Rockwell Collins has been removed from the report as our research pointed to the expiration of contracts and no current contracts were identified for nuclear weapons work. Leidos has been removed because current contracts only tie them to communications, command and control production, and broad project management which is outside of the scope of this report. ThyssenKrupp has also been removed as we cannot verify current contracts related to their work for the Israeli arsenal.

Moog has been added, as research identified current contracts for the production of key components related to nuclear weapons in the UK and US arsenals. Walchandnagar Industries has been added, as research identified current contracts for production of key components related to India's nuclear arsenal.

Profiles of Nuclear Weapons Producers

This section provides basic information about each of the 26 identified nuclear weapons producers, including their work on nuclear weapons. Information was gathered using websites and annual reports of military companies; military and government sources; research reports; trade magazines and general press reports. The selection of the nuclear weapon companies was based on availability of information on the company's involvement in the production of nuclear weapons and the likelihood that the company is predominantly financed by financial institutions.

Each section includes information about the general type of work the company does, contact information (website Twitter, and Facebook if available), financial information about the company and details about their involvement in nuclear weapons. A list is also included showing which financial institutions invest in each producer.

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Aecom (United States)

Company profile

Aecom is based in the United States and provides professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government.¹

In the financial year ending 30 September 2014, Aecom reported revenues of US\$ 8.4 billion (€ 6.6 billion), resulting in an operating income of US\$ 353 million (€ 278 million) and a net income of US\$ 230 million (€ 181 million).² In October 2014, Aecom acquired US technology and engineering company URS.³

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Nuclear weapons

Together with partners Babcock & Wilcox, CH2M Hill and Northrop Grumman, Aecom is a joint venture partner in National Security Technologies (NSTec). The exact ownership distribution is not known. Since 2006, NSTec has managed the Nevada National Security Site (NNSS), previously known as the Nevada Test Site.⁴ The US\$ 3.1 billion (€ 2.3 billion) contract includes operation and maintenance of over 500 facilities and laboratories as well as associated infrastructure, vehicles, and IT/communications.⁵ The NNSS is the only US nuclear test site where subcritical tests are still taking place, and is a critical facility for the modernisation of the US nuclear arsenal. The most recent subcritical test was the Pollux test in December 2012.⁶ In the financial years 2014 to 2016, the National Nuclear Security Administration (NNSA) is planning the Lyra-series of three scaled-integral implosion experiments; these include Vega, a subcritical experiment in the NNSS complex using a plutonium pit.⁷

The joint venture is responsible for managing the nuclear explosives safety team, as well as support hazardous chemical spill testing, and emergency response training, among other tasks.⁸ Aecom states that it specifically oversees remote field experiments, multiple laboratory operations, waste management systems, and the design and fabrication of electronic, mechanical and structural systems at the NNSS.⁹

Through its acquisition of URS in October 2014, Aecom is now also involved in the Lawrence Livermore (LLNL) and Los Alamos National Laboratories (LANL), which are jointly managed by Babcock & Wilcox, University of California, Bechtel and URS Corporation. The Livermore partnership also includes Battelle

and Texas A&M University.¹⁰ LLNL and LANL play an important role in the research, design, development and production of nuclear weapons.¹¹

The LANL contract alone, which was awarded in 2006, has a total value of US\$14 billion (€ 10 billion).¹² Despite substandard performance in recent years, the consortium managing the LANL was granted a waiver extending the contract through 2018. This was subsequently revoked and reduced to 2017. However, the Department of Energy cut the fees in recent years, by 90% in 2014 alone, citing a “significant or ‘First Degree’ performance failure” of the contractor. Despite the waiver, the contractor could ultimately still end up losing the contract due to poor performance.¹³

The contract for LLNL was awarded in 2007 and currently runs through September 2019.¹⁴ The maximum possible fee to be collected under the contract is US\$ 45.5 million (€ 37.6 million) a year.¹⁵ At both LLNL and LANL, the National Nuclear Security Administration was criticised for renewing contracts despite poor performance of the contractors.¹⁶

Investors

The following financial institutions have made approximately USD 19,272 million available to this producer since January 2012.

Allianz (Germany)	Hotchkis & Wiley Capital Management (United States)
Anchor Bolt Capital (United States)	HSBC (United Kingdom)
ANZ (Australia)	Hua Nan Financial (Taiwan)
Auto-Owners Insurance (United States)	Invesco (United States)
AXA (France)	Ivory Investment Management (United States)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	JPMorgan Chase (United States)
Bank of America (United States)	KeyCorp (United States)
Bank of Communications (China)	Lord, Abnett & Co (United States)
Bank of New York Mellon (United States)	Lyrical Partners (United States)
Barclays (United Kingdom)	M&T Bank (United States)
BB&T (United States)	Macquarie Group (Australia)
BlackRock (United States)	Manulife Financial (Canada)
BMO Financial Group (Canada)	Mega Financial (Taiwan)
BNP Paribas (France)	MetLife (United States)
BPCE Group (France)	Mitsubishi UFJ Financial (Japan)
Capital Group (United States)	Mizuho Financial (Japan)
Capital One Financial (United States)	Morgan Stanley (United States)
Central Bank of Libya (Libya)	Muzinich & Co (United States)
Chiba Bank (Japan)	Neuberger Berman (United States)
CI Financial (Canada)	New Jersey Department of the Treasury (United States)
Citigroup (United States)	New Mountain Capital (United States)
City National Corporation (United States)	New York Life Insurance Company (United States)
Comerica (United States)	Northern Trust (United States)
Commerzbank (Germany)	Northwestern Mutual Life Insurance (United States)
Crédit Agricole (France)	Norwegian Government Pension Fund (Norway)
Dimensional Fund Advisors (United States)	Orix Corporation (Japan)
E.SUN Financial (Taiwan)	Pictet (Switzerland)
Fidelity Investments (United States)	Polar Capital Holdings (United Kingdom)
Fidelity Worldwide Investment (United Kingdom)	Poplar Forest Capital (United States)
Fifth Third Bancorp (United States)	Power Financial Corporation (Canada)
First Financial Holding (Taiwan)	Primecap Management (United States)
Franklin Resources (United States)	Principal Financial Group (United States)
Geode Capital Management (United States)	Prudential (UK) (United Kingdom)
Goldman Sachs (United States)	Prudential Financial (US) (United States)
Greenlight Capital (United States)	

Pzena Investment Management (United States)
 Royal Bank of Scotland (United Kingdom)
 S&T Bancorp (United States)
 Scotiabank (Canada)
 SinoPac Holdings (Taiwan)
 Standard Chartered (United Kingdom)
 State Bank of India (India)
 State Street (United States)
 State Teachers Retirement System of Ohio (United States)
 Steinberg Asset Management (United States)
 Sumitomo Mitsui Financial (Japan)
 SunTrust (United States)
 Taiwan Business Bank (Taiwan)

Taiwan Cooperative Financial (Taiwan)
 Taiwan Financial Holding (Taiwan)
 Thornburg Investment Management (United States)
 TIAA-CREF (United States)
 Toronto-Dominion Bank (Canada)
 UBS (Switzerland)
 UniCredit (Italy)
 US Bancorp (United States)
 Vanguard (United States)
 Wedge Capital Management (United States)
 Wellington Management (United States)
 Wells Fargo (United States)
 Westpac Banking (Australia)

Aerojet Rocketdyne (United States)

Company profile

Aerojet Rocketdyne, formerly GenCorp, based in the United States, is engaged in aerospace and military (through subsidiary Aerojet) (more than 99%) and real estate (Easton).¹⁷

In the financial year ending 30 November 2014, Aerojet Rocketdyne generated revenues of US\$ 1.6 billion (€ 1.3 billion), resulting in an operating income of US\$ 13 million (€ 11 million) and a net loss of US\$ 53 million (€ 43 million).¹⁸

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Nuclear weapons

Aerojet Rocketdyne's aerospace and military segment is involved in design, development and production of land-based and sea-based nuclear ballistic missile systems.¹⁹ It currently produces solid and liquid propulsion systems for the Minuteman III and Trident II (D5) nuclear missile systems.²⁰ There are 450 Minuteman III currently deployed and they are expected to stay active until at least 2030.²¹ The submarine-launched Trident II (D5) missile is currently aboard US Ohio-class and British Vanguard-class submarines.²² The US is planning to keep the Trident II missiles deployed until 2042.²³

In December 2013, Aerojet Rocketdyne was awarded a US\$ 28.9 million (€ 21.2 million) contract under the Air Force Nuclear Weapons Center Propulsion Applications Program (PAP) to develop a Medium Class Stage III motor with propulsion technologies applicable to multiple future common strategic propulsion systems. The programme aims to provide a direct replacement solution option for the Minuteman III stage III motors. Besides modernising and replacing Minuteman III, the motors are also meant to support a wide range of potential strategic propulsion systems. Work is planned to be completed by October 2016.²⁴

Investors

The following financial institutions have made approximately USD 2,577 million available to this producer since January 2012.

Aerojet Rocketdyne Pension Fund (United States)	Lord, Abbett & Co (United States)
AXA (France)	M&T Bank (United States)
Bank of America (United States)	MassMutual Financial (United States)
Bank of New York Mellon (United States)	Mitsubishi UFJ Financial (Japan)
BlackRock (United States)	Mizuho Financial (Japan)
BPCE Group (France)	Morgan Stanley (United States)
Chesapeake Partners Management (United States)	New York Life Insurance Company (United States)
Citigroup (United States)	NewSouth Capital Management (United States)
City National Corporation (United States)	Nomura (Japan)
Columbia Threadneedle Investments (United States)	Northern Trust (United States)
D.E. Shaw & Co. (United States)	NorthPointe Capital (United States)
Deutsche Bank (Germany)	Ohio Public Employees Retirement System (United States)
Dimensional Fund Advisors (United States)	Old Mutual (United Kingdom)
Eaton Vance (United States)	Pelican Bay (United States)
Ferguson Wellman Capital Management (United States)	Principal Financial Group (United States)
Fidelity Investments (United States)	Prudential (UK) (United Kingdom)
Fidelity Worldwide Investment (Bermuda)	Raymond James Financial (United States)
First Eagle Investment Management (United States)	Regions Financial (United States)
Geode Capital Management (United States)	Royal Capital Management (United States)
GGCP (United States)	State Street (United States)
Hartford Financial Services (United States)	Steel Partners Holdings (United States)
Invesco (United States)	Sun Life Financial (Canada)
IONIC Capital Management (United States)	SunTrust (United States)
JPMorgan Chase (United States)	T. Rowe Price (United States)
Keely Holdings (United States)	TIAA-CREF (United States)
Kennedy Capital Management (United States)	Two Sigma Investments (United States)
Kingstown Capital Management (United States)	US Bancorp (United States)
Lawson Kroeker Investment Management (United States)	Vanguard (United States)
Legal & General (United Kingdom)	Victoria Capital (United States)
Legg Mason (United States)	Victory Capital (United States)
Lodge Hill Capital (United States)	Wells Fargo (United States)
	Winslow Asset Management (United States)

Airbus Group (The Netherlands)

Company profile

Airbus Group, based in the Netherlands, engages in the manufacture and sale of commercial aircraft, civil and military helicopters, commercial space launch vehicles, missiles, military aircraft, satellites, military systems and military electronics. In May 2014, the company changed its corporate name from EADS to Airbus Group.²⁵

In the year ending 31 December 2014, Airbus Group generated revenues of € 60.7 billion, resulting in an operating income of € 4.0 billion and a net income of € 2.3 billion.²⁶

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Nuclear weapons

Airbus and its predecessor companies have been involved in the French nuclear weapons programme from the outset. In December 2004, EADS Space Transportation was awarded a contract with a value in excess of € 3 billion for the production of the M51 missile, an upgrade from the M45 carrying the same warhead (TN75).²⁷ The first nuclear submarine to be equipped with the M51 was *Le Terrible* in 2010, followed by the other new-generation submarines, *Le Vigilant*, delivered in 2013, *Triomphant*, starting in 2013, and *Le Téméraire*, expected to start in 2015.²⁸ Airbus is also responsible for the ongoing maintenance of the M45 and M51 missiles.²⁹

A second version of the missile, the M51.2, with new nuclear warheads, was commissioned in July 2010, expected to enter into service in 2016.³⁰ It is equipped with a new sea-launched nuclear warhead (TNO) developed by the French Alternative Energies and Atomic Energy Commission (Commissariat à l'énergie atomique et aux énergies alternatives, CEA).³¹ In 2014, Airbus announced that it was also awarded a contract for the development of the third version of the ballistic missile, M51.3.³²

MBDA-Systems, a joint venture between BAE Systems (37.5%), Airbus (37.5%) and Finmeccanica (25%), supplied the medium-range air-to-surface missile ASMPA to the French air force, which has been operational since 2011.³³ In July 2014, MBDA commenced work on design and development of the mid-life upgrade of the ASMPA, to extend life through 2035. The contract has a value of € 57.3 million.³⁴ Reportedly MBDA is also charged with the development of the ASMPA-successor ASN4G, to be operational in 2035.³⁵

Investors

The following financial institutions have made approximately USD 33,376 million available to this producer since January 2012.

American Equity Investment Life Holding (United States)	First Pacific Advisors (United States)
ANZ (Australia)	Goldman Sachs (United States)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	Greenhaven Associates (United States)
Bank of America (United States)	Helaba (Germany)
Bank of New York Mellon (United States)	HSBC (United Kingdom)
Barclays (United Kingdom)	Industrial and Commercial Bank of China (China)
BayernLB (Germany)	ING Group (Netherlands)
BlackRock (United States)	Intesa Sanpaolo (Italy)
BNP Paribas (France)	JPMorgan Chase (United States)
BPCE Group (France)	KfW (Germany)
Capital Group (United States)	Landesbank Baden-Württemberg (LBBW) (Germany)
Children's Investment Fund Management (United Kingdom)	Liberty Mutual Insurance (United States)
Citigroup (United States)	Lloyds Banking Group (United Kingdom)
Commerzbank (Germany)	Manulife Financial (Canada)
Commonwealth Bank of Australia (Australia)	MassMutual Financial (United States)
Crédit Agricole (France)	Mitsubishi UFJ Financial (Japan)
Crédit Mutuel CIC Group (France)	Mizuho Financial (Japan)
Crédit Suisse (Switzerland)	Morgan Stanley (United States)
Danske Bank (Denmark)	National Western Life Insurance Company (United States)
DBS (Singapore)	Primecap Management (United States)
Deutsche Bank (Germany)	Prudential Financial (US) (United States)
DZ Bank (Germany)	Royal Bank of Canada (Canada)
Erste Group (Austria)	Royal Bank of Scotland (United Kingdom)
	Santander (Spain)

Skandinaviska Enskilda Banken (Sweden)
Société Générale (France)
Standard Chartered (United Kingdom)
Sumitomo Mitsui Financial (Japan)
T. Rowe Price (United States)
TIAA-CREF (United States)

Toronto-Dominion Bank (Canada)
UBS (Switzerland)
UniCredit (Italy)
Vanguard (United States)
Westpac Banking (Australia)

Babcock & Wilcox (United States)

Company profile

Babcock & Wilcox Company, based in the United States, provides energy technology and services primarily for the nuclear, fossil fuel and renewable power markets worldwide. The company's four business units are nuclear energy, nuclear operations, power generation and technical services.³⁶

In the financial year ending 31 December 2014, Babcock & Wilcox reported revenues of US\$ 2.9 billion (€ 2.4 billion), resulting in an operating loss of US\$ 2.6 million (€ 2.1 million) and a net income of US\$ 29 million (€ 24 million).³⁷

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Nuclear weapons

Babcock & Wilcox offers various services, including uranium processing, environmental site restoration and operating services, for a number of government-owned facilities, primarily within the US nuclear weapons complex.³⁸

The Lawrence Livermore (LLNL) and Los Alamos National Laboratories (LANL) are jointly managed by Babcock & Wilcox, University of California, Bechtel and URS Corporation (since October 2014 part of AECOM). The Livermore partnership also includes Battelle¹ and Texas A&M University.³⁹ LLNL and LANL play an important role in the research, design, development and production of nuclear weapons.⁴⁰

The LANL contract, awarded in 2006, has a total value of US\$14 billion (€ 10 billion).⁴¹ Despite substandard performance in recent years, the consortium managing the LANL was granted a waiver extending the contract through 2018. This was subsequently revoked and reduced to 2017. However, the Department of Energy cut the fees in recent years, by 90% in 2014 alone, citing a "significant or 'First Degree' performance failure of the contractor." Despite the waiver, the contractor could ultimately still end up losing the contract due to poor performance.⁴² The performance is evaluated on a yearly basis.⁴³

The contract for LLNL was awarded in 2007 and currently runs through September 2019.⁴⁴ The maximum possible fee to be collected under the contract is US\$ 45.5 million (€ 37.6 million) a year.⁴⁵ As at LANL, the National Nuclear Security Administration was criticised for renewing lucrative deals at LLNL despite poor performance of the contractors.⁴⁶

¹ Battelle is a U.S. based 501(c)(3) charitable trust. In examining their tax records, they appear to have reported only government income and no external or private financing.

Babcock & Wilcox, with Aecom, CH2M Hill and Northrop Grumman, is also a joint venture partner in National Security Technologies (NSTec) which manages the Nevada National Security Site (NNSS), previously known as the Nevada Test Site, under a contract with a value of US\$ 3.1 billion (€ 2.3 billion).⁴⁷ The exact ownership distribution is not known. This contract includes operation and maintenance of over 500 facilities and laboratories as well as the associated infrastructure, vehicles, and IT/communications.⁴⁸ The NNSS is the only US nuclear test site where subcritical tests are still taking place, and is a critical facility for the modernisation of the US nuclear arsenal. The most recent subcritical test was the Pollux test in December 2012.⁴⁹ In the financial year 2014 to 2016, the National Nuclear Security Administration (NNSA) is planning the Lyra-series of three scaled-integral implosion experiments; these include Vega, a subcritical experiment in the NNSS complex using a plutonium pit.⁵⁰

Investors

The following financial institutions have made approximately USD 2,208 million available to this producer since January 2012.

Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	KeyCorp (United States)
Bank of America (United States)	Mitsubishi UFJ Financial (Japan)
BB&T (United States)	Northern Trust (United States)
BlackRock (United States)	PNC Financial Services (United States)
BNP Paribas (France)	Regions Financial (United States)
Citizens Bank & Trust (United States)	Royal Bank of Scotland (United Kingdom)
Comerica (United States)	Scotiabank (Canada)
Crédit Agricole (France)	Sumitomo Mitsui Financial (Japan)
Fifth Third Bancorp (United States)	Toronto-Dominion Bank (Canada)
Hancock Holding (United States)	US Bancorp (United States)
JPMorgan Chase (United States)	Wells Fargo (United States)

BAE Systems (United Kingdom)

Company profile

BAE Systems, based in the United Kingdom, operates as a military, security and aerospace company worldwide. The company's main segments are electronic systems, intelligence & security, maritime, military air & services and support solutions.⁵¹

In the financial year ending 31 December 2014, BAE Systems reported revenues of £ 15.4 billion (€ 19.7 billion), resulting in an operating income of £ 1.3 billion (€ 1.7 million) and a net income of £ 740 million (€ 946 million).⁵²

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Nuclear weapons

In December 2013, BAE Systems Technology Solutions was awarded a US\$ 56.5 million (€ 41.7 million) contract for the US and UK Trident II (D5) strategic weapons system programs, US guided missile submarine attack weapons system programmes, nuclear weapons security, and future concepts, with

completion in September 2014. Under the US Navy contract, BAE Systems provided engineering and integration support to the Fleet Ballistic Program. The company also supplied various products for the Common Missile Compartment concept development effort to ensure that the existing Trident II (D5) is compatible with the concept being pursued for the program. Over the full three-year period the contract has a value of US\$ 171.4 million (€ 124.6 million).⁵³

In October 2014, the Strategic Systems Programs (SSP) of the US Navy awarded BAE Systems a US\$ 17.3 million (€ 12.5 million) contract running until 30 September 2015 and including three one-year options bringing the total value to US\$ 75.0 million (€ 54.1 million). Under the contract, BAE Systems provides supply support and information technology services for the Trident II (D5) Strategic Weapon System (SWS) Program and the SSGN Attack Weapon System (AWS) Program. Primary functions are the management and integration of SSP's supply Automated Data Processing (ADP) systems; material support operations; and supply system analysis.⁵⁴

In August 2013, BAE Systems took over from Northrop Grumman as the prime contractor for Minuteman III Intercontinental Ballistic Missile (ICBM) system engineering/technical assistance support, training and development. The contract awarded by the US Air Force is worth more than US\$ 535 million (€ 403.3 million) and runs through 2021.⁵⁵ The takeover of tasks by BAE from Northrop Grumman was completed in June 2014. Among the 29 key tasks, two critical activities were identified as weapon system effectiveness and force development evaluation, which involves analyzing the Air Force's Minuteman III test launches.⁵⁶ BAE Systems performed a test launch in September 2014.⁵⁷

MBDA-Systems, a joint venture between BAE Systems (37.5%), Airbus (37.5%) and Finmeccanica (25%), supplied the medium-range air-to-surface missile ASMPA to the French air force, which has been operational since 2011.⁵⁸ In July 2014, MBDA commenced work on design and development of the mid-life upgrade of the ASMPA, to extend life through 2035. The contract has a value of € 57.3 million.⁵⁹ Reportedly MBDA is also charged with the development of the ASMPA-successor ASN4G, to be operational in 2035.⁶⁰

Investors

The following financial institutions have made approximately USD 28560 million available to this producer since January 2012.

Aberdeen Asset Management (United Kingdom)	CNO Financial Group (United States)
Aegon (Netherlands)	Commerzbank (Germany)
Allianz (Germany)	Commonwealth Bank of Australia (Australia)
Allstate (United States)	Crédit Agricole (France)
American Equity Investment Life Holding (United States)	Crédit Mutuel CIC Group (France)
American International Group (AIG) (United States)	Crédit Suisse (Switzerland)
American United Mutual Insurance (United States)	Deutsche Bank (Germany)
Ameriprise Financial (United States)	Fidelity Investments (United States)
ANZ (Australia)	Franklin Resources (United States)
Auto-Owners Insurance (United States)	Goldman Sachs (United States)
AXA (France)	Guilford (United States)
Bank of America (United States)	Hartford Financial Services (United States)
Bank of New York Mellon (United States)	Invesco (United States)
Barclays (United Kingdom)	JPMorgan Chase (United States)
BayernLB (Germany)	Jupiter Investment Management Group (United Kingdom)
BlackRock (United States)	Legal & General (United Kingdom)
BNP Paribas (France)	Liberty Mutual Insurance (United States)
Capital Group (United States)	Lloyds Banking Group (United Kingdom)
Citigroup (United States)	Loews Corporation (United States)

LSV Asset Management (United States)
 M&G Investments (United Kingdom)
 Macquarie Group (Australia)
 Majedie Asset Management (United Kingdom)
 Manulife Financial (Canada)
 Marathon Asset Management (United Kingdom)
 MassMutual Financial (United States)
 MetLife (United States)
 Mitsubishi UFJ Financial (Japan)
 Mizuho Financial (Japan)
 Morgan Stanley (United States)
 National Bank of Abu Dhabi (United Arab Emirates)
 National Western Life Insurance Company (United States)
 New York Life Insurance Company (United States)
 Northwestern Mutual Life Insurance (United States)
 Norwegian Government Pension Fund (Norway)
 Pacific Century Group (China)
 Pacific Mutual (United States)
 Prudential (UK) (United Kingdom)
 Prudential Financial (US) (United States)

Royal Bank of Canada (Canada)
 Royal Bank of Scotland (United Kingdom)
 Schroders (United Kingdom)
 Securian (United States)
 Silchester International Investors (United Kingdom)
 Skandinaviska Enskilda Banken (Sweden)
 Société Générale (France)
 State Farm (United States)
 State Street (United States)
 Sumitomo Mitsui Financial (Japan)
 Sun Life Financial (Canada)
 Thrivent Financial (United States)
 TIAA-CREF (United States)
 Toronto-Dominion Bank (Canada)
 UBS (Switzerland)
 Unum Group (United States)
 USS Investment Management (United Kingdom)
 Vanguard (United States)
 Wells Fargo (United States)
 Woodford Investment Management (United Kingdom)

Bechtel (United States)

Company profile

Bechtel Group, a private company based in the United States, operates as an engineering, construction and project management company. Its business units are civil infrastructure, communications, mining and metals, oil, gas and chemicals, power and US government services.⁶¹

In the financial year 2014, Bechtel Group reported revenues of US\$ 37.2 billion (€ 30.6 billion). Profits are not reported by the company.⁶²

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Nuclear weapons

Bechtel's business unit US Government Services assists the US Department of Energy (DoE) in the areas of national security, scientific research and environmental clean-up.⁶³

The Lawrence Livermore (LLNL) and Los Alamos National Laboratories (LANL) are jointly managed by Babcock & Wilcox, University of California, Bechtel and URS Corporation (part of AECOM since October 2014). The Livermore partnership also includes Battelle² and Texas A&M University.⁶⁴ LLNL and LANL play an important role in the research, design, development and production of nuclear weapons.⁶⁵

The LANL contract, awarded in 2006, has a total value of US\$14 billion (€ 10 billion).⁶⁶ Despite substandard performance in recent years, the consortium managing the LANL was granted a waiver

² Battelle is a U.S. based 501(c)(3) charitable trust. In examining their tax records, they appear to have reported only government income and no external or private financing.

extending the contract through 2018. This was subsequently revoked and reduced to 2017. However, the Department of Energy cut the fees in recent years, by 90% in 2014 alone, citing a “significant or ‘First Degree’ performance failure of the contractor. Despite the waiver, the contractor could ultimately still end up losing the contract due to poor performance.”⁶⁷

The contract for LLNL was awarded in 2007 and currently runs through September 2019.⁶⁸ The maximum possible fee to be collected under the contract is US\$ 45.5 million (€ 37.6 million) a year.⁶⁹ Also for LLNL, the National Nuclear Security Administration was criticised for renewing lucrative deals despite poor performance of the contractors.⁷⁰

Until June 2014, Bechtel and Babcock & Wilcox jointly managed the Y-12 National Security Complex in Tennessee and the Pantex Plant in Texas. Since July 2014, the management and operation of the sites has been fully taken over under one contract by Consolidated Nuclear Security (CNS). CNS is a Bechtel-led joint venture including Lockheed Martin, Orbital ATK, SOC, and Booz Allen Hamilton³.⁷¹ The US\$ 446 million (€ 326.5 million) contract has a base-term of five years, with options for an additional five years. The contract includes design and construction of a Uranium Processing Facility (UPF) at the Y-12 National Security Complex and an option for Savannah River Tritium Operations at the Savannah River Site in South Carolina.⁷²

Investors

The following financial institutions have made approximately USD 10,475 million available to this producer since January 2012.

³ Research indicated that SOC provides security services only, while Booz Allen Hamilton is a broad consulting firm who work is not integral to maintain the nuclear arsenal.

Bank of America (United States)
Barclays (United Kingdom)
BNP Paribas (France)
Citigroup (United States)
Crédit Agricole (France)
JPMorgan Chase (United States)

Lloyds Banking Group (United Kingdom)
Mitsubishi UFJ Financial (Japan)
Riyad Bank (Saudi Arabia)
Royal Bank of Scotland (United Kingdom)
Sumitomo Mitsui Financial (Japan)

Boeing (United States)

Company profile

Boeing, based in the United States, is the world’s largest aerospace company and a leading manufacturer of jetliners and military, space and security systems. Its products and services include commercial and military aircraft, satellites, bombs and missiles, electronic and military systems, launch systems, advanced information and communication systems, and performance-based logistics and training.⁷³

In the financial year ending 31 December 2014, Boeing reported revenues of US\$ 90.8 billion (€ 74.7 billion), resulting in an operating income of US\$ 7.5 billion (€ 6.1 billion) and a net income of US\$ 5.4 billion (€ 4.5 billion).⁷⁴

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Nuclear weapons

Since 1958, Boeing has been responsible for the development and production of the US long-range nuclear LGM-30 Minuteman Intercontinental Ballistic Missiles (ICBM) (versions I, II and III). All Minuteman I and II have been retired.⁷⁵ However, 450 Minuteman III are still deployed.⁷⁶

Boeing is responsible for guidance, flight controls, secure codes and ground subsystems, as well as designing, testing, modernizing and repairing ICBM systems and components. The modernisation programme is meant to extend the service life of Minuteman III through the year 2030.⁷⁷ In early 2015, the US Air Force awarded US\$ 51.2 million (€ 45.3 million) to Boeing to provide sustaining engineering support and programme management support services for ICBM guidance systems. Work is expected to be completed by February 2023.⁷⁸

In June 2015, the Air Force Nuclear Weapon Center awarded Boeing a US\$ 466.5 million (€ 423.3 million) contract for Minuteman III guidance repair. Work is expected to be completed by June 2021.⁷⁹

In September 2014, Boeing obtained a maximum value US\$ 13.9 million (€ 10.6 million) contract by the US Navy's Strategic Systems Programs to provide the Trident II (D5) Navigation Subsystem with component production and technical support services of the navigation system, test equipment and software modernization, and repair of the system, for the United States and United Kingdom. Work is expected to be completed in June 2017.⁸⁰

In December 2014, Boeing was awarded a US\$ 39.5 million (€ 32.0 million) contract with options of up to US\$ 80.2 million (€ 64.9 million) to provide the US and UK Trident II (D5) maintenance, repair, and rebuilding and technical services in support of the navigation subsystem. Work is expected to be completed in September 2017.⁸¹

Since 2013, Boeing along with Lockheed Martin, Northrop Grumman and Raytheon, have been under contract to conduct studies in support of the Air Force Long-Range Standoff (LRSO) missile plans. This line-up is expected to become a four-way competition to build a Long Range Standoff weapon.⁸² In October 2014, the US Nuclear Weapons Council reportedly selected the W80-1 thermonuclear warhead for the LRSO nuclear cruise missile, scheduled for deployment in 2027. After modification during a life-extension programme, the warhead will be dubbed W80-4.⁸³ Very little information about what the US Air Force is seeking in an LRSO missile is publicly available.⁸⁴

Investors

The following financial institutions have made approximately USD 77,126 million available to this producer since January 2012.

Aegon (Netherlands)	BayernLB (Germany)
Allianz (Germany)	BlackRock (United States)
Allstate (United States)	Blaylock Beal Van (United States)
American Century Investments (United States)	BNP Paribas (France)
American International Group (AIG) (United States)	Cantor Fitzgerald (United States)
ANZ (Australia)	Capital Group (United States)
Apto Partners (United States)	Central Bank of Libya (Libya)
AXA (France)	Citigroup (United States)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	Columbia Threadneedle Investments (United States)
Bank of America (United States)	Commerzbank (Germany)
Bank of China (China)	Crédit Agricole (France)
Bank of New York Mellon (United States)	Crédit Suisse (Switzerland)
Barclays (United Kingdom)	DBS (Singapore)

Deutsche Bank (Germany)
 Divine Capital Markets (United States)
 Drexel Hamilton (United States)
 Evercore (United States)
 Fidelity Investments (United States)
 Franklin Resources (United States)
 GE Capital Services (United States)
 Geode Capital Management (United States)
 Goldman Sachs (United States)
 Goto Capital Markets (United States)
 Great Pacific Securities (United States)
 Guilford (United States)
 Hartford Financial Services (United States)
 Huntington Bancshares (United States)
 ICICI Bank (India)
 Industrial and Commercial Bank of China (China)
 Intesa Sanpaolo (Italy)
 Janus Capital Group (United States)
 JPMorgan Chase (United States)
 Lebenthal Holdings (United States)
 Legg Mason (United States)
 Liberty Mutual Insurance (United States)
 Lloyds Banking Group (United Kingdom)
 Loop Capital (United States)
 Mackie Research Financial (Canada)
 Manulife Financial (Canada)
 MetLife (United States)
 Mischler Financial Group (United States)
 Mitsubishi UFJ Financial (Japan)
 Mizuho Financial (Japan)
 Morgan Stanley (United States)
 National Bank of Abu Dhabi (United Arab Emirates)
 Neuberger Berman (United States)
 New York Life Insurance Company (United States)

Northern Trust (United States)
 Northwestern Mutual Life Insurance (United States)
 Prudential (UK) (United Kingdom)
 Prudential Financial (US) (United States)
 Riyadh Bank (Saudi Arabia)
 Royal Bank of Canada (Canada)
 Royal Bank of Scotland (United Kingdom)
 Santander (Spain)
 SAR Holding (United States)
 Securian (United States)
 Siebert Brandford Shank Financial (United States)
 Siebert Capital (United States)
 Société Générale (France)
 Standard Chartered (United Kingdom)
 State Bank of India (India)
 State Farm (United States)
 State Street (United States)
 Sumitomo Mitsui Financial (Japan)
 SunTrust (United States)
 T. Rowe Price (United States)
 Telsey Advisory Group (United States)
 TIAA-CREF (United States)
 Toronto-Dominion Bank (Canada)
 Travelers (United States)
 UBS (Switzerland)
 Unum Group (United States)
 US Bancorp (United States)
 Vanguard (United States)
 Voya Financial (United States)
 Waddell & Reed Financial (United States)
 Wellington Management (United States)
 Wells Fargo (United States)
 Westpac Banking (Australia)
 Williams Capital Group (United States)

CH2M Hill (United States)

Company profile

CH2M Hill provides consulting, design, design-build, operations, and programme management services for the energy, environmental, facilities, resources, transportation and water sectors.⁸⁵

In the financial year ending 31 December 2014, CH2M Hill generated revenues of US\$ 5.4 billion (€ 4.5 billion), resulting in an operating loss of US\$ 342 million (€ 281 million) and a net loss of US\$ 182 million (€ 149 million).⁸⁶

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Nuclear weapons

CH2M Hill, with Aecom, Babcock & Wilcox and Northrop Grumman, is a partner in National Security

Technologies (NSTec). The exact ownership distribution is not known. Since 2006, NSTec has managed the Nevada National Security Site (NNSS), previously known as the Nevada Test Site.⁸⁷ This US\$ 3.1 billion (€ 2.3 billion) contract includes the operation and maintenance of over 500 facilities and laboratories as well as the associated infrastructure, vehicles, and IT/communications.⁸⁸ The NNSS is the only US nuclear test site where subcritical tests are still taking place. The most recent one was the Pollux test in December 2012.⁸⁹ In the financial year 2014 to 2016, the National Nuclear Security Administration (NNSA) is planning the Lyra-series of three scaled-integral implosion experiments; these include Vega, a subcritical experiment in the NNSS complex using a plutonium pit.⁹⁰

The joint venture is responsible for managing the nuclear explosives safety team, as well as support for hazardous chemical spill testing, emergency response training, and more. CH2M Hill claims to be responsible for planning and integration of the entire site, waste management, including operating a low level radioactive disposal facility, environmental restoration of the land contaminated from many years of nuclear testing, and legal counsel.⁹¹

Investors

The following financial institutions have made approximately USD 2,600 million available to this producer since January 2012.

Bank of America (United States)
BNP Paribas (France)
HSBC (United Kingdom)
JPMorgan Chase (United States)
Mitsubishi UFJ Financial (Japan)

Northern Trust (United States)
Royal Bank of Scotland (United Kingdom)
US Bancorp (United States)
Wells Fargo (United States)

Engility Holdings (United States)

Company profile

Engility is operating as a provider of specialized technical consulting, engineering and technology lifecycle support, information technology modernization and sustainment, supply chain services and logistics management, and training and education for the U.S. Government.⁹² In February 2015, Engility acquired US-based TASC for an estimated US\$ 1.3 billion (€ 1.1 billion).⁹³ TASC provides information and security services, intelligence and information management services.⁹⁴

In the financial year ending 31 December 2014, that is before the acquisition of TASC, Engility generated revenues of US\$ 1.4 billion (€ 1.14 billion), resulting in an operating income of US\$ 82.9 million (€ 68.2 million) and a net income of US\$ 35.4 million (€ 29.1 million).⁹⁵ TASC claims to generate approximately US\$ 1.5 billion (€ 1.2 billion) in annual revenue.⁹⁶

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Nuclear weapons

As part of its work on the Minuteman III Weapon System, TASC conducts the mission planning and post flight analysis of the accuracy and other performance parameters of the regular US Air Force flight tests. The company also supports system engineering functions for upgrades and enhancements to the ICBM system.⁹⁷

In January 2014, TASC was awarded a US\$ 6.9 million (€ 5.0 million) contract for research and development on the Solid Rocket Motor Modernization Study of the Minuteman III system. Under the contract running until July 2015, TASC conducted a study to develop and investigate propulsion options and impacts for replacement or modernisation of the Minuteman III fielded force.⁹⁸ Another US\$ 6.9 million (€ 5.4 million) contract was awarded to TASC in September 2014 under the same program.⁹⁹

Investors

The following financial institutions have made approximately USD 2,794 million available to this producer since January 2012.

ACK Asset Management (United States)	Northern Trust (United States)
Barclays (United Kingdom)	Norwegian Government Pension Fund (Norway)
BlackRock (United States)	Old Mutual (United Kingdom)
Deutsche Bank (Germany)	Power Financial Corporation (Canada)
Fidelity Investments (United States)	Ranger Capital (United States)
General Atlantic (United States)	Regions Financial (United States)
Gotham Asset Management (United States)	Renaissance Technologies (United States)
JPMorgan Chase (United States)	Royal Bank of Canada (Canada)
Kohlberg Kravis Roberts & Co (United States)	State Street (United States)
Legg Mason (United States)	SunTrust (United States)
Leucadia National Corporation (United States)	T. Rowe Price (United States)
LSV Asset Management (United States)	Vanguard (United States)
Mizuho Financial (Japan)	Victory Capital (United States)

Finmeccanica (Italy)

Company profile

Finmeccanica, based in Italy, develops products and services in the fields of aerospace, military, security and transportation.¹⁰⁰

In the financial year ending 31 December 2014, Finmeccanica generated revenues of € 14.7 billion, resulting in an operating income of € 539 million and a net loss of € 31 million.¹⁰¹

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Finmeccanica SpA

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Nuclear weapons

Finmeccanica's US-subsiary DRS obtained a US\$ 25 million (€ 18.8 million) contract from the US Air Force in June 2013 for the design, development and delivery of two Transporter Erector Replacement Vehicles to support the Intercontinental Ballistic Missile (ICBM) Minuteman III-fleet.¹⁰² Transporter Erectors play a critical role as the sole vehicle used for transporting, positioning and removing the Minuteman III-boosters at various US-launch facilities. It is considered a vital piece of equipment for the ICBM weapon system.¹⁰³

Delivery of the first two Transporter Erectors is to be completed by November 2015. If all options are

exercised by the Air Force, the total value of the Transporter Erector Replacement Program (TERP) could reach over US\$ 92 million (€ 69.3 million) for up to 26 mobile vehicles to be delivered through 2019. The operation is overseen by the Air Force Global Strike Command.¹⁰⁴

MBDA-Systems, a joint venture between BAE Systems (37.5%), Airbus (37.5%) and Finmeccanica (25%), supplied the medium-range air-to-surface missile ASMPA to the French air force, which has been operational since 2011.¹⁰⁵ In July 2014, MBDA commenced work on design and development of the mid-life upgrade of the ASMPA, to extend life through 2035. The contract has a value of € 57.3 million.¹⁰⁶ Reportedly MBDA is also charged with the development of the ASMPA-successor ASN4G, to be operational in 2035.¹⁰⁷

Investors

The following financial institutions have made approximately USD 12,614 million available to this producer since January 2012.

Aegon (Netherlands)	Dimensional Fund Advisors (United States)
Allianz (Germany)	Fidelity Investments (United States)
Allstate (United States)	GE Capital Services (United States)
American International Group (AIG) (United States)	Goldman Sachs (United States)
Anima (Italy)	Grantham, Mayo, Van Otterloo & Co (United States)
AXA (France)	Gruppo BPM (Italy)
Banca Monte dei Paschi di Siena (Italy)	HSBC (United Kingdom)
Banca Popolare di Sondrio (Italy)	Intesa Sanpaolo (Italy)
Banca Popolare Emilia Romagna (Italy)	JPMorgan Chase (United States)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	Libyan Investment Authority (Libya)
Banco di Sardegna (Italy)	Majedie Asset Management (United Kingdom)
Banco Popolare (Italy)	Mitsubishi UFJ Financial (Japan)
Bank of America (United States)	Morgan Stanley (United States)
Bank of China (China)	Muzinich & Co (United States)
Barclays (United Kingdom)	Northwestern Mutual Life Insurance (United States)
BlackRock (United States)	Norwegian Government Pension Fund (Norway)
BNP Paribas (France)	Royal Bank of Scotland (United Kingdom)
BPCE Group (France)	Santander (Spain)
Carige Group (Italy)	Société Générale (France)
Citigroup (United States)	Sumitomo Mitsui Financial (Japan)
Commerzbank (Germany)	TIAA-CREF (United States)
Crédit Agricole (France)	UBI Banca (Italy)
Crédit Mutuel CIC Group (France)	UBS (Switzerland)
Deka Group (Germany)	UniCredit (Italy)
Deutsche Bank (Germany)	Vanguard (United States)

Fluor (United States)

Company profile

Fluor, based in the United States, provides complex engineering, procurement, construction, and maintenance projects for commercial and government clients.¹⁰⁸

In the year ending 31 December 2014, Fluor generated revenues of US\$ 21.5 billion (€ 17.7 billion), resulting in an operating income of US\$ 1.2 billion (€ 991 million) and a net income of US\$ 511 million (€ 420 million).¹⁰⁹

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Nuclear weapons

Fluor is the lead partner in Savannah River Nuclear Solutions (SRNS), a joint venture with Honeywell and Newport News Nuclear (part of Huntington Ingalls).¹¹⁰ SRNS is responsible for the management and operation of the Department of Energy's Savannah River Site and Savannah River National Laboratory in South Carolina under a US\$ 4 billion (€ 2.7 billion) five-year contract until 2013. The Department of Energy prolonged the contract in September 2012 until September 2016. The extension brings the total value of the SRNS contract to approximately US\$ 8 billion (€ 5.4 billion).¹¹¹

SRNS is responsible for site management and operation, environmental management, management of the nuclear arsenal, the removal of excess nuclear materials, and environmental services. The Tritium Extraction Facility at the Savannah River Site is the only source of new tritium for the US nuclear stock. Tritium, a radioactive form of hydrogen (also called "super heavy water"), is essential for the continued operation of the US nuclear arsenal.¹¹²

Investors

The following financial institutions have made approximately USD 13,111 million available to this producer since January 2012.

Ackermans & van Haaren (Belgium)	ING Group (Netherlands)
Allianz (Germany)	Intesa Sanpaolo (Italy)
Allstate (United States)	Invesco (United States)
American Financial Group (United States)	JPMorgan Chase (United States)
American International Group (AIG) (United States)	Knights of Columbus (United States)
American National Insurance (United States)	Legal & General (United Kingdom)
American United Mutual Insurance (United States)	Legg Mason (United States)
ANZ (Australia)	Letko Brosseau & Associates (Canada)
Aquiline Capital Partners (United States)	Lloyds Banking Group (United Kingdom)
Artisan Partners (United States)	Loews Corporation (United States)
Auto-Owners Insurance (United States)	Mitsubishi UFJ Financial (Japan)
Bank of America (United States)	Mizuho Financial (Japan)
Bank of New York Mellon (United States)	Modern Woodmen of America (United States)
Barclays (United Kingdom)	Morgan Stanley (United States)
Beck, Mack & Oliver (United States)	National Western Life Insurance Company (United States)
Bessemer Group (United States)	Northern Trust (United States)
BlackRock (United States)	Norwegian Government Pension Fund (Norway)
BNP Paribas (France)	Old Republic International (United States)
Citadel (United States)	Orix Corporation (Japan)
Citigroup (United States)	Pacific Century Group (China)
Crédit Agricole (France)	Pacific Mutual (United States)
Deutsche Bank (Germany)	Power Financial Corporation (Canada)
Edmond de Rothschild (Switzerland)	Prudential Financial (US) (United States)
Gandhara Capital Management (United Kingdom)	Regions Financial (United States)
Geode Capital Management (United States)	Royal Bank of Canada (Canada)
Goldman Sachs (United States)	Santander (Spain)
Gotham Asset Management (United States)	Scotiabank (Canada)
Guggenheim Capital (United States)	StanCorp Financial (United States)
HGK Asset Management (United States)	Standard Chartered (United Kingdom)
HSBC (United Kingdom)	

State Farm (United States)
 State Street (United States)
 Sumitomo Mitsui Financial (Japan)
 Sun Life Financial (Canada)
 TIAA-CREF (United States)
 Travelers (United States)
 Two Sigma Investments (United States)
 UBS (Switzerland)
 United Fire Group (United States)

US Bancorp (United States)
 USAA Investment Management Company (United States)
 Vanguard (United States)
 Wedge Capital Management (United States)
 Wells Fargo (United States)
 Woodmen of the World Life Insurance Society (United States)

General Dynamics (United States)

Company profile

General Dynamics, based in the United States, provides business aviation; land and expeditionary combat systems; armaments and munitions; shipbuilding and marine systems; information systems, technologies, and; mission-critical information systems and technology.¹¹³

In the financial year ending 31 December 2014, General Dynamics generated revenues of US\$ 30.9 billion (€ 25.4 billion), resulting in an operating income of US\$ 3.9 billion (€ 3.2 billion) and a net income of US\$ 2.5 billion (€ 2.1 billion).¹¹⁴

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Nuclear weapons

Since 2005, General Dynamics' Advanced Information Systems (GDAIS) has been involved in a project with Honeywell International and Raytheon to stretch the lifecycle of the guidance systems of the Trident II (D5) nuclear missiles of the US Navy.¹¹⁵ In January 2012, it obtained another US\$ 96 million (€ 75 million) contract for production and deployed-systems support of the Trident II-weapons system, with a maximum contract value of US\$ 225 million (€ 173 million) if all options are exercised.¹¹⁶ The submarine-launched Trident II (D5) missile is currently aboard US Ohio-class and British Vanguard-class submarines.¹¹⁷ The US plans to keep the Trident II missiles deployed until 2042.¹¹⁸

In December 2013, GDAIS was awarded a US\$ 115 million (€ 84.2 million) contract for a range of engineering, development, and production activities to support to US and UK Trident II Strategic Weapons Systems. The maximum dollar value, including the base period and one option year, is US\$ 217.7 million (€ 159.4 million). Work is expected to be completed by March 2016.¹¹⁹

In August 2014, General Dynamics Electric Boat was awarded a US\$ 9.0 million (€ 6.7 million) contract for the ongoing acquisition of the weapons systems shipboard development, integration requirements, and shipboard engineering for refuelling support for the United States and United Kingdom Trident II D5 missile program. The maximum value including base period and two option years is US\$ 32.3 million (€ 24.1 million).¹²⁰

In January 2015, General Dynamics Advanced Information Systems and C4 Systems were combined to become General Dynamics Mission Systems.¹²¹

Investors

The following financial institutions have made approximately USD 35,674 million available to this producer since January 2012.

Allstate (United States)	Lord, Abbett & Co (United States)
American Equity Investment Life Holding (United States)	Macquarie Group (Australia)
American Family Mutual Insurance (United States)	Manulife Financial (Canada)
American International Group (AIG) (United States)	MassMutual Financial (United States)
American National Insurance (United States)	MetLife (United States)
ANZ (Australia)	Mitsubishi UFJ Financial (Japan)
AQR Capital Management (United States)	Mizuho Financial (Japan)
Aquiline Capital Partners (United States)	National Bank of Abu Dhabi (United Arab Emirates)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	New York Life Insurance Company (United States)
Bank of America (United States)	Northern Trust (United States)
Bank of New York Mellon (United States)	Northwestern Mutual Life Insurance (United States)
Barclays (United Kingdom)	Old Mutual (United Kingdom)
BlackRock (United States)	Old Republic International (United States)
BMO Financial Group (Canada)	Orix Corporation (Japan)
Capital Group (United States)	PNC Financial Services (United States)
Citadel (United States)	Power Financial Corporation (Canada)
Columbia Threadneedle Investments (United States)	Prudential Financial (US) (United States)
Crédit Suisse (Switzerland)	Riyad Bank (Saudi Arabia)
D.E. Shaw & Co. (United States)	Royal Bank of Scotland (United Kingdom)
Deutsche Bank (Germany)	Sanders Capital (United States)
Dimensional Fund Advisors (United States)	Santander (Spain)
Evercore (United States)	Scotiabank (Canada)
Fidelity Investments (United States)	State Farm (United States)
Fiera Capital (Canada)	State Street (United States)
Franklin Resources (United States)	Sumitomo Mitsui Financial (Japan)
GE Capital Services (United States)	SunTrust (United States)
General Re (United States)	Svenska Handelsbanken (Sweden)
Geode Capital Management (United States)	TIAA-CREF (United States)
Guggenheim Capital (United States)	Toronto-Dominion Bank (Canada)
Invesco (United States)	Travelers (United States)
Janus Capital Group (United States)	US Bancorp (United States)
JPMorgan Chase (United States)	Vanguard (United States)
Lloyds Banking Group (United Kingdom)	Wellington Management (United States)
Longview Asset Management (United States)	Wells Fargo (United States)
	Williams Capital Group (United States)

Honeywell International (United States)

Company profile

Honeywell International, based in the United States, operates as a diversified technology and manufacturing company. The company's business units are aerospace, automation and control solutions, transportation systems and specialty materials.¹²²

In the financial year ending 31 December 2014, Honeywell International generated revenues of US\$ 40.3 billion (€ 33.2 billion), resulting in an operating income of US\$ 5.8 billion (€ 4.8 billion) and a net income of US\$ 4.2 billion (€ 3.5 billion).¹²³

Website:	Twitter:	Facebook:
honeywell.com/	@Honeywell_Aero	www.facebook.com/HoneywellAero

Nuclear weapons

Honeywell Federal Manufacturing & Technologies manages and operates the National Security Campus (formerly Kansas City Plant), a facility of the National Nuclear Security Administration (NNSA), where an estimated 85% of the non-nuclear components for US nuclear weapons are produced.¹²⁴ In 2010, the NNSA extended the contract with Honeywell to manage the facility for a maximum of five years, expiring in September 2015.¹²⁵ The base contract has a value of US\$ 1.8 billion (€ 1.3 billion).¹²⁶ In July 2015, a US\$ 900 million (€ 817.4 million) follow-on contract for an initial period of five years and five one-year options was awarded to Honeywell.¹²⁷ The Los Alamos Office of the National Security Campus supports the manufacturing of detonator assemblies and collaborates with Los Alamos National Laboratory (LANL) to develop fiber-optic sensors to support hydrodynamic testing.¹²⁸

Honeywell is co-owner of Savannah River Nuclear Solutions (SRNS), together with lead partner Fluor and Newport News Nuclear (part of Huntington Ingalls). Since 2008, SRNS has been responsible for the management and operation of the Department of Energy's Savannah River Site and Savannah River National Laboratory in South Carolina under a US\$ 4 billion (€ 2.7 billion) five-year contract. The Department of Energy prolonged the contract in September 2012 to September 2016. The extension brings the total value of the SRNS contract to approximately US\$ 8 billion (€ 5.4 billion).¹²⁹

SRNS is responsible for site management and operation, environmental management, management of the nuclear arsenal, the removal of excess nuclear materials, and environmental services. The Tritium Extraction Facility at the Savannah River Site is the only source of new tritium for the US nuclear stockpile. Tritium, a radioactive form of hydrogen (also called "super heavy water"), is essential for the continued operation of the US nuclear arsenal.¹³⁰

Honeywell, with General Dynamics and Raytheon, were involved in a project to stretch the lifecycle of the Trident II (D5) nuclear missiles of the US Navy.¹³¹ The company produced components for integrated circuits at its factory in Plymouth (Minnesota).¹³² As a subcontractor to Charles Stark Draper Laboratories, Honeywell performed work under at least one more contract issued in December 2011. It contributed 5% or an estimated US\$ 6.0 million (€ 4.5 million) to the US\$ 120.2 million (€ 90.0 million) contract expiring in December 2015 to provide Trident II (D5) Guidance System micro circuit wafers and Strategic Systems Programs alterations materials.¹³³ The submarine-launched Trident II (D5) missile is currently aboard US Ohio-class and British Vanguard-class submarines, which have 24 launch tubes.¹³⁴ The US are planning to keep the Trident II missiles deployed until 2042.¹³⁵

Investors

The following financial institutions have made approximately USD 65,514 million available to this producer since January 2012.

Aegon (Netherlands)	Bank of America (United States)
Allianz (Germany)	Bank of China (China)
American Equity Investment Life Holding (United States)	Bank of New York Mellon (United States)
American Family Mutual Insurance (United States)	Barclays (United Kingdom)
American International Group (AIG) (United States)	BlackRock (United States)
ANZ (Australia)	BNP Paribas (France)
Aquiline Capital Partners (United States)	Capital Group (United States)
Aviva (United Kingdom)	Citigroup (United States)
AXA (France)	Columbia Threadneedle Investments (United States)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)	Commonwealth Bank of Australia (Australia)
	Crédit Agricole (France)

Danske Bank (Denmark)	Old Mutual (United Kingdom)
DBS (Singapore)	Pacific Century Group (China)
Deutsche Bank (Germany)	Power Financial Corporation (Canada)
Evercore (United States)	Primecap Management (United States)
Fidelity Investments (United States)	Prudential Financial (US) (United States)
Fiduciary Management (United States)	Royal Bank of Canada (Canada)
Franklin Resources (United States)	Royal Bank of Scotland (United Kingdom)
GE Capital Services (United States)	Santander (Spain)
Geode Capital Management (United States)	Scotiabank (Canada)
GGCP (United States)	Securian (United States)
Goldman Sachs (United States)	Société Générale (France)
HSBC (United Kingdom)	Standard Chartered (United Kingdom)
Industrial and Commercial Bank of China (China)	State Farm (United States)
Intesa Sanpaolo (Italy)	State Fund (United States)
Invesco (United States)	State Street (United States)
Janus Capital Group (United States)	Sumitomo Mitsui Financial (Japan)
JPMorgan Chase (United States)	Sun Life Financial (Canada)
Knights of Columbus (United States)	T. Rowe Price (United States)
Lazard (United States)	TIAA-CREF (United States)
Legg Mason (United States)	Toronto-Dominion Bank (Canada)
Lloyds Banking Group (United Kingdom)	Travelers (United States)
Macquarie Group (Australia)	UniCredit (Italy)
MassMutual Financial (United States)	US Bancorp (United States)
MetLife (United States)	Vanguard (United States)
Mitsubishi UFJ Financial (Japan)	Voya Financial (United States)
Mizuho Financial (Japan)	Wellington Management (United States)
Morgan Stanley (United States)	Wells Fargo (United States)
Nationwide Mutual Insurance (United States)	Westpac Banking (Australia)
New York Life Insurance Company (United States)	Williams Capital Group (United States)
Northern Trust (United States)	Woodmen of the World Life Insurance Society (United States)
Northwestern Mutual Life Insurance (United States)	
Nuveen Investments (United States)	

Huntington Ingalls Industries (United States)

Company profile

Huntington Ingalls Industries (HII), based in the United States, designs, constructs and maintains nuclear and non-nuclear ships for the US Navy and Coast Guard and offers after-market services for military ships around the world.¹³⁶

In the financial year ending 31 December 2014, HII generated revenues of US\$ 7.0 billion (€ 5.7 billion), resulting in an operating income of US\$ 655 million (€ 539 million) and a net income of US\$ 338 million (€ 278 million).¹³⁷

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www.huntingtoningalls.com	@hiindustries	www.facebook.com/HuntingtonIngallsIndustries

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 Newport News, VA 23607
 +1.757.380.2000

Nuclear weapons

Huntington Ingalls Industries subsidiary Newport News Nuclear is co-owner of Savannah River Nuclear Solutions (SRNS), with lead partner Fluor and Honeywell. HII has a 34% ownership interest in SRNS.¹³⁸ Since 2008, SRNS is responsible for the management and operation of the Department of Energy's Savannah River Site and Savannah River National Laboratory in South Carolina under a US\$ 4 billion (€ 2.7 billion) five-year contract. The Department of Energy prolonged the contract in September 2012 to September 2016. The extension brings the total value of the SRNS contract to approximately US\$ 8 billion (€ 5.4 billion).¹³⁹

SRNS is responsible for site management and operation, environmental management, management of the nuclear arsenal, the removal of excess nuclear materials, and environmental services. The Tritium Extraction Facility at the Savannah River Site is the only source of new tritium for the US nuclear stock. Tritium, a radioactive form of hydrogen (also called "super heavy water"), is essential for the continued operation of the US nuclear arsenal.¹⁴⁰

Investors

The following financial institutions have made approximately USD 8,229 million available to this producer since January 2012.

AJO (United States)	LSV Asset Management (United States)
Allianz (Germany)	Man Group (United Kingdom)
American Century Investments (United States)	Manulife Financial (Canada)
American International Group (AIG) (United States)	MassMutual Financial (United States)
American United Mutual Insurance (United States)	MetLife (United States)
Ameriprise Financial (United States)	Mitsubishi UFJ Financial (Japan)
AQR Capital Management (United States)	Mizuho Financial (Japan)
AXA (France)	Morgan Stanley (United States)
Bank of America (United States)	National Rural Electric Cooperative Association (United States)
Bank of New York Mellon (United States)	Nationwide Mutual Insurance (United States)
BB&T (United States)	New York Life Insurance Company (United States)
BlackRock (United States)	Northern Trust (United States)
BMO Financial Group (Canada)	Northwestern Mutual Life Insurance (United States)
BPCE Group (France)	Norwegian Government Pension Fund (Norway)
Capital One Financial (United States)	Old Mutual (United Kingdom)
Charles Schwab Corporation (United States)	Orix Corporation (Japan)
CI Financial (Canada)	Pacific Century Group (China)
Citigroup (United States)	PNC Financial Services (United States)
Columbia Threadneedle Investments (United States)	Power Financial Corporation (Canada)
Crédit Suisse (Switzerland)	Prudential Financial (US) (United States)
D.E. Shaw & Co. (United States)	Renaissance Technologies (United States)
Deutsche Bank (Germany)	Royal Bank of Scotland (United Kingdom)
Dimensional Fund Advisors (United States)	Schroders (United Kingdom)
Earnest Partners (United States)	Scotiabank (Canada)
Eaton Vance (United States)	Siemens Financial Services (Germany)
Fidelity Investments (United States)	State Street (United States)
Fifth Third Bancorp (United States)	State Teachers Retirement System of Ohio (United States)
First Eagle Investment Management (United States)	Sumitomo Mitsui Financial (Japan)
Franklin Resources (United States)	Sun Life Financial (Canada)
Geode Capital Management (United States)	SunTrust (United States)
Goldman Sachs (United States)	Thrivent Financial (United States)
Gotham Asset Management (United States)	TIAA-CREF (United States)
Guggenheim Capital (United States)	Toronto-Dominion Bank (Canada)
Invesco (United States)	Two Sigma Investments (United States)
Jacobs Levy Equity Management (United States)	UBS (Switzerland)
JPMorgan Chase (United States)	
Lord, Abbett & Co (United States)	

UMB Financial Corporation (United States)
Unum Group (United States)
US Bancorp (United States)

Vanguard (United States)
Wellington Management (United States)
Wells Fargo (United States)

Jacobs Engineering (United States)

Company profile

Jacobs Engineering Group, based in the United States, provides professional, technical and construction services. Among its primary markets are aerospace and military, energy, oil and gas and infrastructure.¹⁴¹

In the financial year ending 26 September 2014, Jacobs Engineering generated revenues of US\$ 12.7 billion (€ 10.0 billion), resulting in an operating income of US\$ 528 million (€ 414 million) and a net income of US\$ 328 million (€ 257 million).¹⁴²

Website:

www.jacobs.com

World Headquarters

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Pasadena, California 91101

United States

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Nuclear weapons

In December 2008, Jacobs Engineering acquired a one-third share in the joint venture AWE-ML, the company that manages the United Kingdom's Atomic Weapons Establishment (AWE).¹⁴³ The other equal partners are Lockheed Martin and Serco.¹⁴⁴ AWE is responsible for the maintenance of warheads for the UK's nuclear arsenal, i.e. the Trident, a submarine-launched, intercontinental ballistic missile system carried by the fleet of Vanguard-class submarines. AWE's involvement with Trident covers the entire life cycle, from initial concept to assessment, design, component manufacture and assembly, in-service support and decommissioning and disposal.¹⁴⁵ AWE-ML has a 25 year-long non-revocable contract to run AWE that expires in March 2025.¹⁴⁶

Investors

The following financial institutions have made approximately USD 8,597 million available to this producer since January 2012.

ANZ (Australia)
Artisan Partners (United States)
Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)
Bank of America (United States)
Bank of New York Mellon (United States)
Barclays (United Kingdom)
BlackRock (United States)
BMO Financial Group (Canada)
BNP Paribas (France)
Burgundy Asset Management (Canada)
Cacti Asset Management (United States)
Capital Group (United States)
Century Operating Corporation (United States)
Crédit Suisse (Switzerland)

Deutsche Bank (Germany)
Dimensional Fund Advisors (United States)
EdgePoint Investment Group (Canada)
Fidelity Investments (United States)
Fidelity Worldwide Investment (Bermuda)
Geode Capital Management (United States)
Goldman Sachs (United States)
Gotham Asset Management (United States)
Guggenheim Capital (United States)
Hahn Capital Management (United States)
HSBC (United Kingdom)
JPMorgan Chase (United States)
Kovitz Investment Group (United States)
Lloyds Banking Group (United Kingdom)

Lord, Abnett & Co (United States)
 Madison Investment (United States)
 Mitsubishi UFJ Financial (Japan)
 Northern Trust (United States)
 Platinum Asset Management (Australia)
 Primecap Management (United States)
 Royal Bank of Canada (Canada)
 Royal Bank of Scotland (United Kingdom)
 Ruane, Cunniff & Goldfarb (United States)
 Scotiabank (Canada)
 Silvercrest Asset Management (United States)

Sprucegrove Investment Management (Canada)
 State Street (United States)
 Sumitomo Mitsui Financial (Japan)
 T. Rowe Price (United States)
 Toronto-Dominion Bank (Canada)
 Two Sigma Investments (United States)
 US Bancorp (United States)
 Vanguard (United States)
 Wellington Management (United States)
 Wells Fargo (United States)

Larsen & Toubro (India)

Company profile

Larsen & Toubro, based in India, is a technology, engineering, construction and manufacturing company. It has nine operating divisions, among which are heavy engineering, construction and power.¹⁴⁷

In the financial year ending 31 March 2014, Larsen & Toubro generated revenues of Rp 920.0 billion (€ 13.5 billion), resulting in an operating income of Rp 90.6 billion (€ 1.3 billion) and a net income of Rp 47.6 billion (€ 701 million).¹⁴⁸

Website:

www.larsentoubro.com

Larsen & Toubro Limited
 L&T House, Ballard Estate
 P. O. Box: 278,
 Mumbai 400 001,
 India
 +91 22 6177 4200

Nuclear weapons

Larsen & Toubro is responsible for developing the launcher system for the nuclear-capable surface-to-air Akash missile system developed by India's state-owned Defence Research and Development Organisation (DRDO).¹⁴⁹ According to defence sources, the short-range missile has a strike range of 25 km and is capable of carrying a nuclear warhead of 50kg.¹⁵⁰

Investors

The following financial institutions have made approximately USD 15,640 million available to this producer since January 2012.

A.K. Group (India)
 Abu Dhabi Investment Authority (United Arab Emirates)
 Aditya Birla Group (India)
 Altius Finserv Private (India)
 ANZ (Australia)
 Axis Bank (India)
 Barclays (United Kingdom)
 BlackRock (United States)

BNP Paribas (France)
 Carmignac Gestion (France)
 Citigroup (United States)
 Commonwealth Bank of Australia (Australia)
 Corpbay Financial Services (India)
 Crédit Suisse (Switzerland)
 Darashaw (India)
 Deutsche Bank (Germany)
 Equator Securities (Indonesia)

Export Development Canada (Canada)
 Franklin Resources (United States)
 General Insurance Corporation of India (India)
 GIC (Singapore)
 Goldman Sachs (United States)
 HDFC Bank (India)
 Housing Development Finance Corporation (India)
 HSBC (United Kingdom)
 ICAP (India)
 ICICI Bank (India)
 IDFC (India)
 Kotak Mahindra Bank (India)
 L&T Employees Welfare Foundation (India)
 Life Insurance Corporation of India (India)
 LKP Group (India)
 MassMutual Financial (United States)

Mitsubishi UFJ Financial (Japan)
 Mizuho Financial (Japan)
 Reliance Group (India)
 Royal Bank of Scotland (United Kingdom)
 SPA Group (India)
 Standard Chartered (United Kingdom)
 State Bank of India (India)
 Sumitomo Mitsui Financial (Japan)
 Sumitomo Mitsui Trust (Japan)
 Taurus Group (India)
 Trust Investment Advisors (United States)
 Unit Trust of India (India)
 Vanguard (United States)
 Viel & Cie. (France)
 Yes Bank (India)

Lockheed Martin (United States)

Company profile

Lockheed Martin, based in the United States, focuses on aeronautics, space systems, electronic systems and information systems. Its most important divisions are aerospace and defence, information technology and new technologies.¹⁵¹

In the financial year ending 31 December 2014, it generated revenues of US\$ 45.6 billion (€ 40.3 billion), resulting in an operating income of US\$ 5.6 billion (€ 4.9 billion) and a net income of US\$ 3.6 billion (€ 3.2 billion).¹⁵²

Website:

www.lockheedmartin.com

Twitter:

[@LockheedMartin](https://twitter.com/LockheedMartin)

Facebook:

www.facebook.com/lockheedmartin

6801 Rockledge Drive,
 Bethesda, Maryland 20817-1877
 United States
 +1.301.897.6000

Nuclear weapons

Lockheed Martin is the world's largest weapons producer.¹⁵³ It produces and maintains a wide variety of conventional weapons around the world, as well as nuclear weapons for both the United States and the United Kingdom.¹⁵⁴

Lockheed Martin is responsible for the construction of the Trident II (D5) nuclear missiles for the US Ohio-class submarines and the British Vanguard-class submarines.¹⁵⁵ Trident II (D5) is the only US submarine-launched intercontinental ballistic missile system still in production.¹⁵⁶ The United States is planning to keep Trident II missiles deployed until 2042.¹⁵⁷

In September 2013, Lockheed Martin was awarded a US\$ 15.2 million (€ 11.4 million) contract to support the fiscal year 2014 Trident II (D5) Missile production schedule. Work is expected to be completed in September 2018.¹⁵⁸ This contract was modified several times. In November 2013, Lockheed Martin was awarded US\$ 8.3 million (€ 6.1 million) for new Trident II (D5) missile production, D5 life extension development and production, and D5 deployed systems support. This contract includes options, which if exercised, will bring the contract value to US\$ 803.2 million (€ 594.3 million). Initial

work was expected to be completed December 2014, with all options exercised work will continue to November 2018.¹⁵⁹ A US\$ 34.2 million (€ 26.4 million) modification was awarded in September 2014, for the design, development and procurement of facilities, equipment, and processes required for successful activation and support of a Trident II (D5) missile storage facility as well as the design and delivery of specialized support equipment for the movement and storage of D5 missiles at Camp Navajo, Arizona. Work is expected to be completed in September 2019.¹⁶⁰

In December 2013, Lockheed Martin Space Systems was awarded a US\$ 61.1 million (€ 44.4 million) contract for engineering services and various low-value missile test hardware. It provides for integrating the Trident II missile and re-entry strategic weapon systems subsystems into the common missile compartment for the Ohio replacement and United Kingdom (UK) successor programmes and designing a testing fixture for nozzle shield retention, and designing an integrated test facility that will be compatible with existing and new submarine fleets. Completion is expected in December 2018.¹⁶¹ Under a US\$ 21.3 million (€ 15.5 million) contract awarded in April 2014, Lockheed Martin provides the United Kingdom with engineering and technical support services and deliverable materials for the UK Trident II Missile System. Completion is expected in June 2016.¹⁶²

In July 2014, Lockheed Martin was awarded a US\$19.9 million (€ 14.6 million) unpriced-letter contract for long-lead material and the labour, planning and scheduling necessary to support the fiscal 2015 Trident II D-5 missile production schedule, expected to be completed in September 2019.¹⁶³ A US\$ 146.3 million (€ 113.6 million) modification for new procurement of Trident II (D5) missile production, D5 Life Extension development and production, and D5 Deployed Systems Support extends work through November 2019. Exercise of all options would increase the contract value to US\$ 828.4 million (€ 643.0 million), provided by US and UK defence budgets.¹⁶⁴

In November 2014, Lockheed Martin was awarded a US\$35.9 million (€ 28.9 million) contract to provide engineering efforts in support of integrating the Trident II missile and re-entry strategic weapon system subsystems into the next-generation ballistic submarine designs of the US and UK. The contract contains two option years, which, if exercised, will bring the contract value to a maximum US\$99.2 million (€ 80.0 million). Work is expected to be completed in December 2017; exercise of options will extend the contract through September 2020.¹⁶⁵

In March 2015, Lockheed Martin was awarded a US\$ 59.0 million (€ 54.4 million) contract for Trident II D-5 Navigation Subsystem Strategic Systems Program Shipboard Integration (SSI). Work is expected to be completed in December 2016. US Navy funds account for US\$47.1 million (€ 43.4 million), United Kingdom funding for the remaining US\$ 11.9 million (€ 11.0 million).¹⁶⁶

In April 2015, Lockheed Martin obtained UK contract funds of a maximum US\$ 31.1 million (€ 28.9 million) to provide engineering and technical support services and deliverable materials for the UK Trident II Missile System with completion foreseen in March 2019.¹⁶⁷

As a member of the ICBM Prime Integration Team, Lockheed Martin is involved in the production and maintenance of the Minuteman III nuclear intercontinental ballistic missiles. The company has been the principal designer, manufacturer and sustainer of Minuteman III re-entry systems since the 1960s.¹⁶⁸ Lockheed Martin is responsible for the weapons, control and re-entry systems in this project led by BAE Systems since June 2014.¹⁶⁹

In March 2011, the company received a US\$ 12.5 million (€ 8.8 million) one-year subcontract by Northrop Grumman for the refurbishment of re-entry vehicle arming and fusing assemblies for the Minuteman III missiles. According to the latest US Air Force plans, these nuclear missiles will continue to be part of the US nuclear defence programme until at least 2030.¹⁷⁰ In June 2014, Lockheed Martin was awarded the contract for sustainment of the re-entry subsystem for the Minuteman III. An initial one-year contract from the US Air Force has a value of US\$ 109.0 million (€ 80.5 million). Options for additional years bring the potential contract value to US\$ 452.0 million (€ 333.9 million). The contract

includes repair, modification and testing of hardware and software components in the re-entry system-re-entry vehicle subsystem and related support equipment. Work is expected to be complete by June 2022.¹⁷¹

Along with Boeing, Northrop Grumman and Raytheon, Lockheed Martin is under contract since 2013 to conduct trade studies in support of the Air Force Long-Range Standoff (LRSO) missile plans. This line-up is expected to become a four-way competition to build a Long Range Standoff weapon.¹⁷² Reportedly the US Nuclear Weapons Council in October 2014 selected the W80-1 thermonuclear warhead for the LRSO nuclear cruise missile, scheduled for deployment in 2027. After modification during a life-extension programme, the warhead will be dubbed W80-4.¹⁷³ Very little information about what the US Air Force is seeking in an LRSO missile is publicly available.¹⁷⁴

Lockheed Martin holds a 33.3% share and takes the lead in the joint venture AWE-ML, the company that manages the United Kingdom's Atomic Weapons Establishment (AWE). The other partners are Jacobs Engineering and Serco.¹⁷⁵ AWE is responsible for the maintenance of warheads for the UK's nuclear arsenal, i.e. the Trident, a submarine-launched, intercontinental ballistic missile system carried by the fleet of Vanguard-class submarines. AWE's involvement with Trident covers the entire life cycle, from initial concept to assessment, design, component manufacture and assembly, in-service support and decommissioning and disposal.¹⁷⁶ AWE-ML has a 25 year-long non-revocable contract to run AWE that expires in March 2025.¹⁷⁷

Lockheed Martin is a member of the Consolidated Nuclear Services (CNS), which took over the management and operation of the Y-12 National Security Complex in Tennessee and the Pantex Plant in Texas under the same contract in 2014. CNS is a Bechtel National-led joint venture including Lockheed Martin Services, ATK Launch Systems (part of Orbital ATK), SOC, and Booz Allen Hamilton⁴ as a teaming subcontractor. The five-year contract with NNSA includes options to extend the contract term up to an additional five years, based on performance.¹⁷⁸ At the Y-12 Complex, nuclear weapons are produced and refurbished, and at the Pantex Plant in Texas the life extension programme for the W76 warheads deployed on Trident II (D5) ballistic missiles is expected to continue through 2018.¹⁷⁹

Investors

The following financial institutions have made approximately USD 48,012 million available to this producer since January 2012.

⁴ Research indicated that SOC provides security services only, while Booz Allen Hamilton is a broad consulting firm whose work is not integral to maintain the nuclear arsenal.

Allianz (Germany)	Crédit Mutuel CIC Group (France)
Allstate (United States)	Deutsche Bank (Germany)
American Family Mutual Insurance (United States)	Drexel Hamilton (United States)
American International Group (AIG) (United States)	First Eagle Investment Management (United States)
American United Mutual Insurance (United States)	Franklin Resources (United States)
Ameriprise Financial (United States)	GE Capital Services (United States)
ANZ (Australia)	Geode Capital Management (United States)
AXA (France)	Goldman Sachs (United States)
Bank of America (United States)	Guilford (United States)
Bank of New York Mellon (United States)	Janus Capital Group (United States)
Barclays (United Kingdom)	JPMorgan Chase (United States)
BlackRock (United States)	Lebenthal Holdings (United States)
Caisse de dépôt et placement du Québec (Canada)	Legg Mason (United States)
Capital Group (United States)	Liberty Mutual Insurance (United States)
Citigroup (United States)	Lloyds Banking Group (United Kingdom)
Columbia Threadneedle Investments (United States)	Loop Capital (United States)
Comerica (United States)	Macquarie Group (Australia)
Crédit Agricole (France)	Manulife Financial (Canada)

MassMutual Financial (United States)
 MetLife (United States)
 Mitsubishi UFJ Financial (Japan)
 Mizuho Financial (Japan)
 Morgan Stanley (United States)
 Nationwide Mutual Insurance (United States)
 New York Life Insurance Company (United States)
 Northern Trust (United States)
 Northwestern Mutual Life Insurance (United States)
 Orix Corporation (Japan)
 Prudential (UK) (United Kingdom)
 Prudential Financial (US) (United States)
 Riyadh Bank (Saudi Arabia)
 Royal Bank of Canada (Canada)
 Royal Bank of Scotland (United Kingdom)
 State Farm (United States)
 State Street (United States)

Sumitomo Mitsui Financial (Japan)
 Sun Life Financial (Canada)
 T. Rowe Price (United States)
 The Dai-ichi Life Insurance Company (Japan)
 Thrivent Financial (United States)
 TIAA-CREF (United States)
 Toronto-Dominion Bank (Canada)
 Travelers (United States)
 UBS (Switzerland)
 UniCredit (Italy)
 Unum Group (United States)
 US Bancorp (United States)
 Vanguard (United States)
 Wellington Management (United States)
 Wells Fargo (United States)
 Western & Southern Financial (United States)
 Williams Capital Group (United States)

Moog (United States)

Company profile

Moog manufactures precision motion control components and systems for applications in aircraft, automotive, defence and space, energy, marine and medical industries.¹⁸⁰

In the financial year ending 27 September 2014, Moog reported revenues of US\$ 2.6 billion (€ 2.1 billion), resulting in an operating income of US\$ 219 million (€ 172 million) and a net profit of US\$ 158 million (€ 124 million).¹⁸¹

Website:
www.moog.com

Twitter:
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Facebook:
www.facebook.com/MoogInc

Nuclear weapons

Moog has developed launch vehicle and strategic missile controls for the Minuteman III and Trident (D5) missiles.¹⁸² Moog acts as a subcontractor for Lockheed Martin, providing Trident (D5) first, second, and third State Servo Actuator Assemblies.¹⁸³

In November 2014, Moog was awarded a US\$ 33.8 million (€ 27.1 million) contract to supply more than one thousand actuators for the next ten Virginia-class nuclear submarines which are under construction under the lead of General Dynamics Electric Boat. Moog's actuators perform a variety of functions in the submarine, including elements of the torpedo launch sequence.¹⁸⁴

Investors

The following financial institutions have made approximately USD 5,457 million available to this producer since January 2012.

Allianz (Germany)
 American United Mutual Insurance (United States)
 Ameriprise Financial (United States)
 AXA (France)
 Bank of America (United States)
 Bank of New York Mellon (United States)
 BB&T (United States)
 BlackRock (United States)

Capital Group (United States)
 Charles Schwab Corporation (United States)
 Cigna (United States)
 Citizens Financial Group (United States)
 Columbia Threadneedle Investments (United States)
 Crédit Agricole (France)
 Deutsche Bank (Germany)
 Dimensional Fund Advisors (United States)

Earnest Partners (United States)
 Eaton Vance (United States)
 Fidelity Investments (United States)
 Fifth Third Bancorp (United States)
 First Horizon (United States)
 First Niagara Financial (United States)
 Geode Capital Management (United States)
 GGCP (United States)
 Goldman Sachs (United States)
 Gotham Asset Management (United States)
 Guggenheim Capital (United States)
 HSBC (United Kingdom)
 Invesco (United States)
 JPMorgan Chase (United States)
 Legal & General (United Kingdom)
 Liberty Mutual Insurance (United States)
 Lord, Abbett & Co (United States)
 M&T Bank (United States)
 MassMutual Financial (United States)
 Mitsubishi UFJ Financial (Japan)
 Mizuho Financial (Japan)
 New York Life Insurance Company (United States)
 New York State Common Retirement Fund (United States)
 Northern Trust (United States)

Norwegian Government Pension Fund (Norway)
 Orix Corporation (Japan)
 Pacific Century Group (China)
 PNC Financial Services (United States)
 Point72 Asset Management (United States)
 Power Financial Corporation (Canada)
 Principal Financial Group (United States)
 Prudential Financial (US) (United States)
 Regions Financial (United States)
 Royal Bank of Canada (Canada)
 Royal Bank of Scotland (United Kingdom)
 State Street (United States)
 T. Rowe Price (United States)
 Thrivent Financial (United States)
 TIAA-CREF (United States)
 Travelers (United States)
 UniCredit (Italy)
 US Bancorp (United States)
 Vanguard (United States)
 Voya Financial (United States)
 Wedge Capital Management (United States)
 Wellington Management (United States)
 Wells Fargo (United States)
 William Blair & Company (United States)
 Williams Capital Group (United States)

Northrop Grumman (United States)

Company profile

Northrop Grumman Corporation, based in the United States, provides products, services and solutions in the military aerospace, electronics, information systems and shipbuilding sectors.¹⁸⁵

In the financial year ending 31 December 2014, Northrop Grumman generated revenues of US\$ 24.0 billion (€ 19.7 billion), resulting in an operating income of US\$ 3.2 billion (€ 2.6 billion) and a net income of US\$ 2.1 billion (€ 1.7 billion).¹⁸⁶

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Nuclear weapons

After acquiring the US company TRW in 2002, Northrop Grumman inherited the leadership of the ICBM Prime Integration Team. This ongoing project was initiated in 1997 and has a total value of US\$ 6.5 billion (€ 5.0 billion). Northrop Grumman and its principle partners ATK (now Orbital ATK), Boeing and Lockheed Martin, are responsible for the production and maintenance of the Minuteman III nuclear Intercontinental Ballistic Missiles (ICBM). There are 450 Minuteman III still deployed today.¹⁸⁷ Northrop Grumman lost its role as prime contractor to BAE Systems in August 2013.¹⁸⁸ During the transition a partial a partial bridge contract worth US\$ 165.0 million (€ 128.3 million)¹⁸⁹ and extended twice (for US\$ 9.9 million (€ 7.4 million) in September 2013¹⁹⁰ and for US\$ 13.7 million (€ 10.0 million)

in March 2014) was awarded by the Air Force for sustaining engineering services for the ICBM weapon system through September 2014.¹⁹¹

In August 2014, Northrop Grumman received a contract modification under the ICBM partial bridge contract for the Operational Software Sustainment Program. The award has a value of US\$ 12.6 million (€ 9.4 million). Work is expected to be completed by September 2015.¹⁹² Another modification awarded in the same month for the sustainment of the propulsion/ground/guidance systems of the ICBM weapon system under the ICBM partial bridge contract has a value of US\$ 89.9 million (€ 66.9 million). Work is expected to be completed by September 2015.¹⁹³

In January 2015, Northrop Grumman was the sole award recipient for a US\$ 963.5 million (€ 817.8 million) contract for ICBM ground subsystems support. The five-year contract entails sustainment engineering, technical assistance and program management services for ground subsystems to include sustainment, assessment, system modification and technical support of ICBMs.¹⁹⁴

In May 2015, it received a US\$ 99.1 million (€ 88.0 million) contract to provide independent testing and evaluation of developer's software and hardware for impacts on Minuteman III nuclear safety. Work is expected to be completed by September 2020.¹⁹⁵

Northrop Grumman was awarded a US\$ 112.9 million (€ 82.5 million) contract for ongoing support to the Trident II (D5) Underwater Launcher System and Advanced Launcher Development Program Support for the US and the UK in December 2013. It is also expected to advance and support the conduct of the technology development of cost-effective launcher subsystem architecture for the Ohio-class Replacement Program. The expected completion date is September 2018.¹⁹⁶ A US\$ 60.1 million (€ 47.4 million) contract modification awarded in September 2014 provides for the exercise of options for ongoing support for the Trident deployed SSBN and the SSGN underwater launcher subsystem, engineering refueling overhaul shipyard support, and United Kingdom launcher trainer support. Work is expected to be completed by September 2018.¹⁹⁷

Since 2013 Northrop Grumman along with Boeing, Lockheed Martin and Raytheon, is under contract to conduct trade studies in support of the Air Force Long-Range Standoff (LRSO) missile plans. This line-up is expected to become a four-way competition to build a Long Range Standoff weapon.¹⁹⁸ Reportedly the US Nuclear Weapons Council in October 2014 selected the W80-1 thermonuclear warhead for the LRSO nuclear cruise missile, scheduled for deployment in 2027. After modification during a life-extension programme, the warhead will be dubbed W80-4.¹⁹⁹ Little information about what the US Air Force is seeking in an LRSO missile is publicly available.²⁰⁰

Northrop Grumman, together with partners Babcock & Wilcox, Aecom and CH2M Hill, is a joint venture partner in National Security Technologies (NSTec). Since 2006, NSTec manages the Nevada National Security Site (NNSS), previously known as Nevada Test Site.²⁰¹ Northrop Grumman was the managing partner, but decreased its interest in NSTec in 2011.²⁰² The exact ownership distribution is not known. This US\$ 3.1 billion (€ 2.3 billion) contract includes operation and maintenance of over 500 facilities and laboratories as well as the associated infrastructure, vehicles, and IT/communications.²⁰³ The NNSS is the only US nuclear test site where subcritical tests are still taking place. The most recent one was the Pollux test in December 2012.²⁰⁴ In the financial years 2014 to 2016, the National Nuclear Security Administration (NNSA) is planning the Lyra-series of three scaled-integral implosion experiments; these include Vega, a subcritical experiment in the NNSS complex using a plutonium pit.²⁰⁵

Investors

The following financial institutions have made approximately USD 33,170 million available to this producer since January 2012.

AJO (United States)	LSV Asset Management (United States)
Allianz (Germany)	Macquarie Group (Australia)
Allstate (United States)	Manulife Financial (Canada)
American Family Mutual Insurance (United States)	MetLife (United States)
American International Group (AIG) (United States)	Mischler Financial Group (United States)
Ameriprise Financial (United States)	Mitsubishi UFJ Financial (Japan)
ANZ (Australia)	Mizuho Financial (Japan)
AQR Capital Management (United States)	Morgan Stanley (United States)
Aviva (United Kingdom)	National Bank of Abu Dhabi (United Arab Emirates)
AXA (France)	Nationwide Mutual Insurance (United States)
Bank of America (United States)	New York Life Insurance Company (United States)
Bank of New York Mellon (United States)	Northern Trust (United States)
Barclays (United Kingdom)	Northwestern Mutual Life Insurance (United States)
BayernLB (Germany)	Old Mutual (United Kingdom)
BB&T (United States)	Pacific Mutual (United States)
BlackRock (United States)	PNC Financial Services (United States)
Blaylock Beal Van (United States)	PointState Capital (United States)
BMO Financial Group (Canada)	Power Financial Corporation (Canada)
BNP Paribas (France)	Prudential (UK) (United Kingdom)
Capital Group (United States)	Prudential Financial (US) (United States)
Capital One Financial (United States)	Royal Bank of Scotland (United Kingdom)
Citigroup (United States)	Schroders (United Kingdom)
Columbia Threadneedle Investments (United States)	Scotiabank (Canada)
Comerica (United States)	State Farm (United States)
Crédit Suisse (Switzerland)	State Street (United States)
Danske Bank (Denmark)	Sumitomo Mitsui Financial (Japan)
Deutsche Bank (Germany)	Sun Life Financial (Canada)
Dimensional Fund Advisors (United States)	SunTrust (United States)
Drexel Hamilton (United States)	Taiwan Business Bank (Taiwan)
DZ Bank (Germany)	Taiwan Cooperative Financial (Taiwan)
First Eagle Investment Management (United States)	The Dai-ichi Life Insurance Company (Japan)
Franklin Resources (United States)	Thrivent Financial (United States)
GE Capital Services (United States)	TIAA-CREF (United States)
Geode Capital Management (United States)	Toronto-Dominion Bank (Canada)
Goldman Sachs (United States)	Travelers (United States)
Guggenheim Capital (United States)	UBS (Switzerland)
Guilford (United States)	UniCredit (Italy)
Gulf Bank (Kuwait)	Unum Group (United States)
Intesa Sanpaolo (Italy)	US Bancorp (United States)
Invesco (United States)	Vanguard (United States)
Janus Capital Group (United States)	Wellington Management (United States)
JPMorgan Chase (United States)	Wells Fargo (United States)
Legg Mason (United States)	Western & Southern Financial (United States)
Lloyds Banking Group (United Kingdom)	Williams Capital Group (United States)

Orbital ATK (United States)

Company profile

Orbital ATK, based in the United States, was formed through the merger of Orbital Sciences and ATK's aerospace and defence businesses in February 2015.²⁰⁶ It supplies aerospace and military products to the US government, allied nations and prime contractors. The company has three operating groups: flight systems, defence systems and space systems. Main products are launch vehicles and related propulsion systems; satellites and associated components and services; composite aerospace structures; tactical missiles, subsystems and defence electronics; and precision weapons, armament systems and ammunition.²⁰⁷

The newly formed company reported revenues of US\$ 3.2 billion (€ 2.9 billion) for the financial year ending 31 March 2015, resulting in an operating income of US\$ 232 million (€ 214 billion) and a net income of US\$ 202 million (€ 186 billion).²⁰⁸

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Nuclear weapons

In November 2009, ATK received a US\$ 100 million (€ 67 million) contract from prime contractor Lockheed Martin to produce rocket propulsion systems for all three stages of the US Navy's Trident II (D5) solid propellant, inertial guided missile system through 2013.²⁰⁹ In early 2015, Orbital ATK announced orders for additional Trident II fleet ballistic missile rocket motors placed by Lockheed Martin.²¹⁰ Lockheed Martin Space Systems was awarded a US\$ 146.3 million (€ 111 million) contract for new procurement of Trident II (D5) missile production, D5 Life Extension development and production, and D5 Deployed Systems Support in August 2014. Orbital ATK has a subcontract the value of which is not known. Work is expected to be completed by November 2019.²¹¹

Orbital ATK is also responsible for refurbishing all three solid propellant stages of the Minuteman III Intercontinental Ballistic Missile (ICBM) under the plan to keep the missiles operational until at least 2030.²¹²

In October 2013, ATK Launch Systems was awarded a US\$ 49.4 million (€ 36.4 million) contract for research and development of the Medium Class Stage III motor that may be applicable to multiple future common strategic propulsion systems. This begins the development of a flight motor design that will be a direct replacement for the SR-73, which is the third stage motor on the Minuteman III ICBM. Work is expected to be completed by October 2016.²¹³

Orbital ATK is a member of Consolidated Nuclear Services (CNS), which took over the management and operation of the Y-12 National Security Complex in Tennessee and the Pantex Plant in Texas under the same contract in 2014. CNS is a Bechtel -led joint venture including Lockheed Martin Services, ATK Launch Systems (part of Orbital ATK), SOC, and Booz Allen Hamilton⁵ as a teaming subcontractor.²¹⁴ The US\$ 446 million (€ 321.7 million) contract has a base-term of five years, with options for an additional five years. The contract also includes design and construction of a Uranium Processing Facility (UPF) at the Y-12 National Security Complex and an option for Savannah River Tritium Operations at the Savannah River Site in South Carolina.²¹⁵

At the Y-12 Complex, nuclear weapons are produced and refurbished, and at the Pantex Plant in Texas the life extension programme for the W76 warheads deployed on Trident II (D5) ballistic missiles is expected to continue through 2018.²¹⁶

Investors

The following financial institutions have made approximately USD 7,055 million available to this producer since January 2012.

5 Research indicated that SOC provides security services only, while Booz Allen Hamilton is a broad consulting firm who work is not integral to maintain the nuclear arsenal.

Affiliated Managers Group (United States)	Allianz (Germany)
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Allstate (United States)	Lord, Abbett & Co (United States)
Alyeska Investment Group (United States)	LSV Asset Management (United States)
Amalgamated Bank of Chicago (United States)	MassMutual Financial (United States)
American International Group (AIG) (United States)	MetLife (United States)
Ameriprise Financial (United States)	Mitsubishi UFJ Financial (Japan)
Associated Banc-Corp (United States)	Mizuho Financial (Japan)
Banco de Sabadell (Spain)	Morgan Stanley (United States)
BancPlus (United States)	Nationwide Mutual Insurance (United States)
Bank Hapoalim (Israel)	New Jersey Department of the Treasury (United States)
Bank of America (United States)	New York Life Insurance Company (United States)
Bank of New York Mellon (United States)	Northern Trust (United States)
Banner Bank (United States)	Old Mutual (United Kingdom)
BB&T (United States)	Pacific Century Group (China)
BlackRock (United States)	People's United Financial (United States)
BNP Paribas (France)	PNC Financial Services (United States)
BPCE Group (France)	Point72 Asset Management (United States)
California First National Bancorp (United States)	Prudential (UK) (United Kingdom)
Capital Group (United States)	Prudential Financial (US) (United States)
Cascade Bancorp (United States)	Raymond James Financial (United States)
Central Pacific Financial Corporation (United States)	Regions Financial (United States)
Chang Hwa Commercial Bank (Taiwan)	Royal Bank of Canada (Canada)
CI Financial (Canada)	Royal Bank of Scotland (United Kingdom)
Citigroup (United States)	Roystone Capital Management (United States)
Columbia Threadneedle Investments (United States)	Siemens Financial Services (Germany)
Comerica (United States)	Southpoint Capital Advisors (United States)
Corsair Capital Management (United States)	Space Acquisition (United States)
Crédit Mutuel CIC Group (France)	StanCorp Financial (United States)
Dimensional Fund Advisors (United States)	State Bank of India (India)
E.SUN Financial (Taiwan)	State Street (United States)
Eastern Bank (United States)	Stifel Financial (United States)
Eaton Vance (United States)	Strategic Income Management (United States)
Fidelity Investments (United States)	Sumitomo Mitsui Financial (Japan)
Fifth Third Bancorp (United States)	SunTrust (United States)
First Eagle Investment Management (United States)	Synovus Financial Corporation (United States)
First Financial Holding (Taiwan)	The London Company of Virginia (United States)
First Niagara Financial (United States)	TIAA-CREF (United States)
Fubon Group (Taiwan)	Travelers (United States)
GE Capital Services (United States)	Trimaran Capital Partners (United States)
Geode Capital Management (United States)	UniCredit (Italy)
Glenmede Trust Company (United States)	United Overseas Bank (Singapore)
Goldman Sachs (United States)	Unum Group (United States)
Gotham Asset Management (United States)	US Bancorp (United States)
Guggenheim Capital (United States)	USAA Investment Management Company (United States)
Hanover Insurance (United States)	Vanguard (United States)
Hua Nan Financial (Taiwan)	Voya Financial (United States)
JPMorgan Chase (United States)	Wellington Management (United States)
KeyCorp (United States)	Wells Fargo (United States)
Land Bank of Taiwan (Taiwan)	
Legg Mason (United States)	
Liberty Mutual Insurance (United States)	

Raytheon (United States)

Company profile

Raytheon is a US-based company providing mainly military electronics, mission systems integration

and other capabilities in the areas of sensing and command, control, communications and intelligence systems as well as a broad range of mission support services.²¹⁷

In the financial year ending 31 December 2013, Raytheon generated revenues of US\$ 22.8 billion (€ 18.8 billion), resulting in an operating income of US\$ 3.2 billion (€ 2.6 billion) and a net income of US\$ 2.2 billion (€ 1.8 billion).²¹⁸

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Raytheon Company
870 Winter Street
Waltham, MA 02451
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Nuclear weapons

In September 2013, Raytheon was awarded a US\$ 33.4 million (€ 24.8 million) contract for contractor logistic support, installation, and sustainment of Minuteman MEECN (Minimum Essential Emergency Communication Network) programme and Minuteman MEECN programme upgrade. Work is expected to be completed by September 2016.²¹⁹

In December 2013, Raytheon was awarded a US\$ 134.4 million (€ 98.0 million) US Air Force contract to design a communications system for command and control of nuclear-armed bombers. The Global Aircrew Strategic Network Terminals Increment I (ASTN) is a multi-path communication system used to disseminate nuclear command and control messages from national-level decision authorities to geographically dispersed locations. Development is expected to be completed by December 2016, with production, installation, and sustainment options extending to December 2020.²²⁰ The overall ASTN programme has a value of US\$ 500 million (€ 371 million).²²¹

Along with Boeing, Lockheed Martin and Northrop Grumman, Raytheon is under contract since 2013 to conduct trade studies in support of the Air Force Long-Range Standoff (LRSO) missile plans. This line-up is expected to become a four-way competition to build a Long Range Standoff weapon.²²² Reportedly the US Nuclear Weapons Council in October 2014 selected the W80-1 thermonuclear warhead for the LRSO nuclear cruise missile, scheduled for deployment in 2027. After modification during a life-extension programme, the warhead will be dubbed W80-4.²²³ Little information about what the US Air Force is seeking in an LRSO missile is publicly available.²²⁴

Investors

The following financial institutions have made approximately USD 24,966 million available to this producer since January 2012.

Aegon (Netherlands)	AXA (France)
Allianz (Germany)	Bank of America (United States)
Allstate (United States)	Bank of New York Mellon (United States)
American Equity Investment Life Holding (United States)	Barclays (United Kingdom)
American Family Mutual Insurance (United States)	Bessemer Group (United States)
American International Group (AIG) (United States)	BlackRock (United States)
American National Insurance (United States)	BNP Paribas (France)
American United Mutual Insurance (United States)	Citigroup (United States)
ANZ (Australia)	Columbia Threadneedle Investments (United States)
AQR Capital Management (United States)	Crédit Agricole (France)
Aquiline Capital Partners (United States)	Crédit Suisse (Switzerland)
	Deutsche Bank (Germany)

Fidelity Investments (United States)	Northwestern Mutual Life Insurance (United States)
First Eagle Investment Management (United States)	Old Mutual (United Kingdom)
Franklin Resources (United States)	Orix Corporation (Japan)
GE Capital Services (United States)	Power Financial Corporation (Canada)
Geode Capital Management (United States)	Prospector Partners (United States)
Guggenheim Capital (United States)	Prudential (UK) (United Kingdom)
Guilford (United States)	Prudential Financial (US) (United States)
Gulf International Bank (Bahrain)	Riyad Bank (Saudi Arabia)
Intesa Sanpaolo (Italy)	Royal Bank of Scotland (United Kingdom)
Invesco (United States)	Sasco Capital (United States)
Invest AD (United Arab Emirates)	Schafer Cullen Capital Management (United States)
Janus Capital Group (United States)	Scotiabank (Canada)
JPMorgan Chase (United States)	State Farm (United States)
Legg Mason (United States)	State Fund (United States)
Liberty Mutual Insurance (United States)	State Street (United States)
Lloyds Banking Group (United Kingdom)	Sumitomo Mitsui Financial (Japan)
LSV Asset Management (United States)	T. Rowe Price (United States)
Macquarie Group (Australia)	The Dai-ichi Life Insurance Company (Japan)
Manulife Financial (Canada)	TIAA-CREF (United States)
MassMutual Financial (United States)	Travelers (United States)
MetLife (United States)	UBS (Switzerland)
Mitsubishi UFJ Financial (Japan)	Unum Group (United States)
Morgan Stanley (United States)	US Bancorp (United States)
National Western Life Insurance Company (United States)	Vanguard (United States)
New York Life Insurance Company (United States)	Wellington Management (United States)
Northern Trust (United States)	Wells Fargo (United States)
	Western & Southern Financial (United States)

Safran (France)

Company profile

Safran, based in France, is a high-tech group with three key business areas: aerospace, defence and security.²²⁵ The French government holds an 18% stake in the company.²²⁶

In 2014, Safran reported revenues of € 15.0 billion, resulting in an operating income of € 1.4 billion and a net loss of € 126 million.²²⁷

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Nuclear weapons

Safran, together with Airbus (formerly EADS), Thales and others, obtained an estimated € 3 billion contract in December 2004 to build the M51 nuclear missile for the new French submarines. Airbus' subsidiary Astrium is the lead contractor, whereas Safran (through its subsidiaries Herakles and Snecma), Thales, and DCNS were selected as the main subcontractors.²²⁸

The M51 features multiple warheads, with far greater payload mass, volume and range than the M45. The nuclear submarine Le Terrible has been equipped with the M51 since late 2010. The missile will also enter operational service aboard the other new-generation submarines, Triomphant and Téméraire, after retrofit. A second version of the missile will be commissioned from 2015.²²⁹

Safran's subsidiary Snecma is the prime contractor for the propulsion system of the M51 missile project, producing all inert components in the rocket motors. Sagem, another subsidiary of Safran, developed the navigation systems for the M51, to improve the accuracy of the missile.²³⁰ SNPE Matériaux Energétiques (SME), a subsidiary of state-owned SNPE which was merged into Safran's subsidiary Herakles together with Snecma Propulsion Solide (SPS) in 2011, made the rocket propellant that powers the nuclear ballistic missile.²³¹ As a prime propulsion contractor for the M45 and M51 ballistic missiles, Herakles remains involved in maintenance and future upgrades to this weapon system.²³²

Investors

The following financial institutions have made approximately USD 13,905 million available to this producer since January 2012.

ABP (Netherlands)	Macquarie Group (Australia)
Affiliated Managers Group (United States)	MassMutual Financial (United States)
Allianz (Germany)	MetLife (United States)
American Equity Investment Life Holding (United States)	Mitsubishi UFJ Financial (Japan)
Ameriprise Financial (United States)	Modern Woodmen of America (United States)
Aviva (United Kingdom)	Morgan Stanley (United States)
Bank of America (United States)	New York Life Insurance Company (United States)
Bank of New York Mellon (United States)	Northwestern Mutual Life Insurance (United States)
BlackRock (United States)	Oddo Group (France)
BNP Paribas (France)	Pacific Mutual (United States)
BPCE Group (France)	Principal Financial Group (United States)
Capital Group (United States)	Royal Bank of Scotland (United Kingdom)
Citigroup (United States)	Santander (Spain)
Commerzbank (Germany)	Sentinel Asset Management (United States)
Country Life Insurance Company (United States)	Société Générale (France)
Crédit Agricole (France)	Southern Farm Bureau Life Insurance (United States)
Crédit Mutuel CIC Group (France)	Sun Life Financial (Canada)
Cuna Mutual Group (United States)	TIAA-CREF (United States)
Deutsche Bank (Germany)	Toronto-Dominion Bank (Canada)
Fidelity Investments (United States)	UBS (Switzerland)
Franklin Resources (United States)	Unum Group (United States)
Great West Lifeco (Canada)	USAA Investment Management Company (United States)
Guggenheim Capital (United States)	Vanguard (United States)
HSBC (United Kingdom)	Voya Financial (United States)
ING Group (Netherlands)	Woodmen of the World Life Insurance Society (United States)
Legg Mason (United States)	

Serco (United Kingdom)

Company profile

Serco Group, based in the United Kingdom, operates as a service company to governments and commercial customers worldwide. Its main business areas in public service are health, education, transport, science and defence.²³³

In the financial year ending 31 December 2014, Serco generated revenues of £ 4.0 billion (€ 5.1 billion), resulting in an operating loss of £ 1.3 billion (€ 1.7 billion) and a net loss of £ 1.3 billion (€ 1.7 billion).²³⁴

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Nuclear weapons

Serco holds a 33.3% share in the joint venture AWE-ML, the company that manages the UK Atomic Weapons Establishment (AWE).²³⁵ The other equal partners are Jacobs Engineering and Lockheed Martin. The AWE is responsible for the maintenance of the warheads for the country's Trident nuclear arsenal. Trident is a submarine-launched, intercontinental ballistic missile system carried by the fleet of Vanguard-class submarines.

AWE's involvement with Trident missiles covers the entire life cycle, from initial concept to assessment, design, component manufacture and assembly, in-service support and decommissioning and disposal.²³⁶ AWE-ML has a 25 year-long non-revocable contract to run the AWE that expires in March 2025.²³⁷

Investors

The following financial institutions have made approximately USD 4,517 million available to this producer since January 2012.

ANZ (Australia)	Legal & General (United Kingdom)
Artisan Partners (United States)	Lloyds Banking Group (United Kingdom)
AXA (France)	Majedie Asset Management (United Kingdom)
Bank of America (United States)	Marathon Asset Management (United Kingdom)
Bank of New York Mellon (United States)	Mitsubishi UFJ Financial (Japan)
Barclays (United Kingdom)	MSD Partners (United States)
BlackRock (United States)	National Bank of Abu Dhabi (United Arab Emirates)
Commerzbank (Germany)	Orbis Group (Bermuda)
Commonwealth Bank of Australia (Australia)	Prudential (UK) (United Kingdom)
Crédit Agricole (France)	Royal Bank of Scotland (United Kingdom)
DBS (Singapore)	Ruane, Cunniff & Goldfarb (United States)
Fidelity Worldwide Investment (Bermuda)	Serco Group Plc Employee Benefit Trust (United Kingdom)
Franklin Resources (United States)	State Administration for Foreign Exchange (China)
GIC (Singapore)	State Street (United States)
Helaba (Germany)	Sumitomo Mitsui Financial (Japan)
HSBC (United Kingdom)	Valarc Holdings (United States)
Invesco (United States)	Vanguard (United States)
JPMorgan Chase (United States)	Woodford Investment Management (United Kingdom)
KBC Group (Belgium)	
Lancaster Investment Management (United Kingdom)	

Textron (United States)

Company profile

Textron is a US-based multi-industry company engaged in aircraft, military, industrial and finance businesses. Military-related business sections include Textron Systems and Bell Helicopter.²³⁸

In the financial year ending 3 January 2015, Textron generated revenues of US\$ 13.9 billion (€ 11.5 billion), resulting in an operating income of US\$ 1.0 billion (€ 866 million) and a net income of US\$ 600 million (€ 498 million).²³⁹

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Nuclear weapons

Textron designs and builds the US Air Force's operational inter-continental ballistic missile (ICBM) re-entry vehicles.²⁴⁰ In March 2014, Textron Defense System was awarded a US\$ 17.2 million (€ 12.5 million) contract to convert up to six Minuteman III MK 12A re-entry vehicles to the Mod 5F configuration. The contract was provided for a five-year ordering period by the US Air Force Nuclear Weapons Center in Utah. It is to provide the government with up to 21 Mod 5F midsections for the ICBM. Work is expected to be completed by March 2020.²⁴¹

Investors

The following financial institutions have made approximately USD 12,589 million available to this producer since January 2012.

Adage Capital Management (United States)	GE Capital Services (United States)
Allstate (United States)	Geode Capital Management (United States)
American Century Investments (United States)	GGCP (United States)
American International Group (AIG) (United States)	Goldman Sachs (United States)
American National Insurance (United States)	Hartford Financial Services (United States)
American United Mutual Insurance (United States)	Invesco (United States)
Aquiline Capital Partners (United States)	JPMorgan Chase (United States)
Artisan Partners (United States)	Knights of Columbus (United States)
Bank of America (United States)	Loews Corporation (United States)
Bank of China (China)	Manulife Financial (Canada)
Bank of East Asia (China)	MassMutual Financial (United States)
Bank of New York Mellon (United States)	MetLife (United States)
BlackRock (United States)	Millennium Management (United States)
BPCE Group (France)	Mitsubishi UFJ Financial (Japan)
Capital Group (United States)	Morgan Stanley (United States)
Carlyle Group (United States)	National Western Life Insurance Company (United States)
Citigroup (United States)	Neuberger Berman (United States)
City National Corporation (United States)	New York Life Insurance Company (United States)
CNO Financial Group (United States)	Northern Trust (United States)
DBS (Singapore)	Northwestern Mutual Life Insurance (United States)
Federated Investors (United States)	PNC Financial Services (United States)
Fidelity Investments (United States)	Prudential (UK) (United Kingdom)
Fidelity Worldwide Investment (Bermuda)	Prudential Financial (US) (United States)
Fifth Third Bancorp (United States)	Securian (United States)
Franklin Resources (United States)	

Sentinel Asset Management (United States)
Snow Capital Management (United States)
State Street (United States)
Sumitomo Mitsui Financial (Japan)
Sun Life Financial (Canada)
SunTrust (United States)
Synovus Financial Corporation (United States)
T. Rowe Price (United States)
The Dai-ichi Life Insurance Company (Japan)
Thrivent Financial (United States)
TIAA-CREF (United States)
Travelers (United States)

UBS (Switzerland)
Unum Group (United States)
US Bancorp (United States)
USAA Investment Management Company (United States)
Vanguard (United States)
Voya Financial (United States)
Wellington Management (United States)
Wells Fargo (United States)
Westfield Capital Management Company (United States)
Williams Capital Group (United States)

Thales (France)

Company profile

Thales, based in France, provides information systems for the military and security, aerospace and transportation markets.²⁴²

In the financial year ending 31 December 2014, Thales generated revenues of € 13.0 billion, resulting in an operating income of € 1.1 billion and a net income of € 714 million.²⁴³

Website:

www.thalesgroup.com

Twitter:

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Nuclear weapons

Thales, together with Airbus (formerly EADS), Safran, SNPE (part of Safran-subsidary Herakles) and DCNS, obtained a contract in December 2004 to build the new M51 nuclear missile for the new French submarines, with an estimated value of € 3 billion. Airbus subsidiary Astrium is the lead contractor, whereas Safran, SNPE, DCNS and Thales are the main subcontractors.²⁴⁴ Thales holds a 35%-stake in DCNS, making it the second largest shareholder after the French government (62.5%).²⁴⁵

The M51 features multiple warheads, with far greater payload mass and volume, than the M45. It also offers a longer range, enabling submarines to expand their patrol zones. The nuclear submarine Le Terrible has been equipped with the M51 since late 2010. The missile will also enter operational service aboard the other new-generation submarines, Triomphant and Téméraire, after retrofit. A second version will be commissioned from 2015.²⁴⁶

DCNS is significantly involved in the modernization of the nuclear ballistic missile submarines of the French Navy to fit the latest standard nuclear missile M51.3, which is being developed by Airbus.²⁴⁷

Investors

The following financial institutions have made approximately USD 6,846 million available to this producer since January 2012.

Acciona (Spain)
 ANZ (Australia)
 Aviva (United Kingdom)
 Banco Bilbao Vizcaya Argentaria (BBVA) (Spain)
 Barclays (United Kingdom)
 BlackRock (United States)
 BNP Paribas (France)
 BPCE Group (France)
 Citigroup (United States)
 Commerzbank (Germany)
 Covéa Finance (France)
 Crédit Agricole (France)
 Crédit Mutuel CIC Group (France)
 Deutsche Bank (Germany)
 Fidelity Worldwide Investment (Bermuda)

HSBC (United Kingdom)
 International Value Advisors (United States)
 Intesa Sanpaolo (Italy)
 JPMorgan Chase (United States)
 Mitsubishi UFJ Financial (Japan)
 National Bank of Abu Dhabi (United Arab Emirates)
 Norwegian Government Pension Fund (Norway)
 Riyadh Bank (Saudi Arabia)
 Royal Bank of Scotland (United Kingdom)
 Santander (Spain)
 Société Générale (France)
 Sumitomo Mitsui Financial (Japan)
 Thales SA Employees Stock Ownership Plan (France)
 UniCredit (Italy)
 Vanguard (United States)

Walchandnagar Industries (India)

Company profile

Walchandnagar Industries Limited (WIL) is a heavy engineering and project execution company with activities in the areas of aerospace and defence, mining and metals, power plants, and other hi-tech and engineering sectors.²⁴⁸

In the financial year ending 30 September 2014, WIL generated revenues of Rp 6.4 billion (€ 82 million), resulting in an operating income of Rp 240 million (€ 3.1 million) and a net loss of Rp 124 million (€ 1.6 million).²⁴⁹

Website:

www.walchand.com

Facebook:

www.facebook.com/WalchandnagarIndustriesLtd

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Nuclear weapons

WIL supplies critical equipment for India's Nuclear Program, including infrastructure and facilities for the production of combustion chambers for the surface-to-air short-range Akash missile and the launching systems for Agni and Akash missiles.²⁵⁰ For the intercontinental ballistic Agni-V missile, WIL Aerospace department manufactured the main thrust motor casing segment. The Agni-V missile, which can carry a nuclear warhead of over one tonne, was test fired in January 2015.²⁵¹

Investors

The following financial institutions, all based in India, have made approximately USD 18 million available to this producer since January 2012.

Lalitabai Lalchand Charity
 Life Insurance Corporation of India
 Olsson Holdings

Reliance Group
 Rodin Holdings

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