



At Great Cost

The companies building nuclear weapons and their financiers

PAX



ICAN
International Campaign to
Abolish Nuclear Weapons

There remains a marked lack of official information available in the public domain about the development, production, transfer and stockpiling of nuclear weapons. We strived to achieve the highest level of accuracy in reporting. The information in this report reflects official information available in the public domain. 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: nukes@paxforpeace.nl.

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And all those who work tirelessly to stigmatize, outlaw, and eliminate nuclear weapons.

Notes:

Certain figures in this report may not tally exactly due to rounding. All figures are presented in United States Dollars (USD, \$) (unless otherwise indicated). Commas (,) are used as thousands separators. This document, as well as any data and any map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

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. PAX is an ICAN partner. More information about PAX can be found at: www.paxforpeace.nl.

About ICAN

ICAN is a global campaign coalition promoting adherence to and implementation of the United Nations Treaty on the Prohibition of Nuclear Weapons. ICAN is comprised of 650 partner organisations in over 100 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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Key Findings

260 financial institutions finance 24 nuclear weapon producers

Between January 2022 and August 2024, 260 banks, pension funds, insurance companies, asset managers and other financial institutions had financing or investment relations with one or more of the 24 nuclear weapon producing companies, down from 287 institutions in previously published results.

Investors held \$514 billion in shares and bonds

Investors held \$513,576 million in shares and bonds in the 24 nuclear weapon producing companies, an increase of \$36.7 billion since the last Don't Bank on the Bomb financial analysis.

\$270 billion provided in loans and underwriting

During the analysed period, \$269,958 million was provided to the 24 nuclear weapon manufacturers in loans and underwriting, a drop of \$6.2 billion since the last Don't Bank on the Bomb financial analysis.

24 Companies producing nuclear weapons

Companies from China, France, India, Italy, the Netherlands and the United States are heavily involved in the production of nuclear weapons. Many of the companies included in this report have multi-year contracts, totalling at least \$465 billion.

Northrop Grumman and General Dynamics remain the biggest nuclear weapons profiteers, with outstanding contracts with a potential value of at least \$31 billion and \$24 billion respectively, not including consortia and joint ventures. BAE Systems, Boeing, Leonardo, Lockheed Martin and RTX also hold multi-billion-dollar contracts for nuclear weapon production and/or sustainment.

THE LIST OF COMPANIES PROFILED IN THIS REPORT ARE:

1. Airbus (The Netherlands);
2. Babcock International (United Kingdom);
3. BAE Systems (United Kingdom);
4. Bechtel (United States);
5. Bharat Dynamics (India);
6. Boeing (United States);
7. China Aerospace Science and Technology (China);
8. Fluor (United States);
9. General Dynamics (United States);
10. Honeywell International (United States);
11. Huntington Ingalls Industries (United States);
12. Jacobs Solutions (United States);
13. L3Harris Technologies (United States);
14. Leidos (United States);
15. Leonardo (Italy);
16. Lockheed Martin (United States);
17. Northrop Grumman (United States);
18. Peraton (United States)
19. RTX (United States);
20. Rolls-Royce (United Kingdom);
21. Safran (France);
22. Textron (United States);
23. Thales (France), and;
24. Walchandnagar Industries Limited (India).

Methodology

Nuclear weapons companies

24 fully profiled companies

This report describes the involvement of 24 companies in the nuclear weapons industry, for which investments or financing relations with private financial institutions were identified. These companies are heavily involved in the nuclear weapons industry through providing key components or services that contribute to activities prohibited under the Treaty on the Prohibition of Nuclear Weapons, including the development, production, manufacture, possession and stockpiling of nuclear weapons systems. Such involvement may be related to warheads, or to specifically designed nuclear capable delivery systems, like missiles. Since the 2023 Don't Bank on the Bomb analysis, contributions to the construction and maintenance of nuclear armed submarines (SSBNs) also fall within the report's methodological scope, as these launch platforms are specifically designed for the delivery of nuclear weapons.

Watchlist

The selected list of nuclear weapons producers is not an exhaustive list of all companies involved in the nuclear weapons industry. In addition to the 24 companies fully profiled, this report also includes a watchlist, which provides additional information about the nuclear weapons enterprise. For example, some watchlist companies build the facilities that allow for the stationing, installation, or deployment of nuclear weapons. For other companies, no investments or financing relations with private financial institutions were identified, but information may still be of interest. The watchlist also includes companies who act as subcontractors, as well as companies for which ties to the nuclear weapons enterprise have been identified, but where sufficient information to clarify the precise scope of activities related to nuclear weapons production, deployment or stockpiling is unavailable. The profiles included in the watchlist are not a comprehensive review of companies of this nature. Rather, they are examples of the types of companies that are also involved in the nuclear weapons industry.

Financiers

This report also lists the financial institutions with investment or financing relationships with one or more of the 24 nuclear weapons producers. This includes the providing of loans and other forms of credit (commercial banking), underwriting of share and bond issuances (investment banking), investments in shares and bonds (asset management) and other financial services. Investments can be made by financial institutions on their own behalf or on behalf of third parties. Financial institutions are listed at the parent group level, and the total amounts listed include their subsidiaries. The companies concerned are often active in a wide range of markets and, as such, also engaged in activities other than their involvement in nuclear weapons production. This report does not claim that the entirety of capital provided by financial institutions listed exclusively flows to nuclear weapon related activities. Nevertheless, financing a company generally supports that company in its entirety, thereby connecting the financial institution to the company's overall activities. It is impossible to ensure that funds provided will not facilitate nuclear weapons production, as even 'earmarked' funds provided by lenders or bond underwriters tend to free other capital flows that companies can use at their discretion.

This report does not list every single investment or line of credit granted to the 24 companies profiled. Government financing is not included. Moreover, only those financial institutions which were found to have the most substantial financing relationships with one or more of the selected companies are listed. For this purpose, the following criteria were applied:

- All financial institutions which were found to participate in loans and underwriting deals since 1 January 2022 are listed. In addition, to provide a fuller picture of the overall credit granted to the nuclear weapons producing companies, participation in loans which were closed before that date, but have not matured before 1 October 2023, is included in this report.

- All financial institutions which were found to own at least 0.5% of the outstanding shares or bonds of one or more of the profiled companies at most recent filing dates are listed. As of August 2024, data was collected at the most recent filing date, which in most cases corresponds to June 28th, 2024.

The information is retrieved from annual reports, financial statements, company registries, investment portfolios of pension funds, company websites, media archives, as well as from specialized financial databases (Refinitiv Eikon, Refinitiv EMAXX, Bloomberg and IJGlobal). While these sources of information are reputable and well-known, they are themselves not comprehensive. The numbers provided in the report are therefore a conservative estimation of the total global financing of the nuclear weapons industry. Certain figures in this report may not tally exactly due to rounding. All figures are presented in United States Dollars (USD, \$) unless otherwise indicated. Commas (,) are used as thousands separators.

Executive Summary

Through personal testimonies and tireless campaigning, 2024 Nobel Peace Laureates Nihon Hidankyo have consistently made one message clear: nuclear weapons cannot coexist with humanity.

From the horrific legacy the use and testing of these weapons left around the world to the catastrophic consequences of even a “limited” nuclear war on people’s lives, food supplies and the climate: the human costs of nuclear weapons are devastating.¹ The Nobel Peace Prize recognition of Nihon Hidankyo’s lifelong efforts has come at a time where risks of nuclear conflict keep rising and states only further deepen their reliance on the unprovable theory of nuclear deterrence.

This also comes at a high economic and societal cost. Diverting public funds from health care, education, housing and other vital services, the nuclear armed states together spent an estimated \$91.4 billion on their nuclear arsenals in 2023, a \$23.2 billion increase in the last five years.²

Nuclear weapons producing companies

Corporations profit greatly from the billions spent on nuclear weapons modernization. This report analyses the contracts and activities of 24 companies heavily involved in the nuclear weapons industry. The majority of companies profiled contribute to the production and maintenance of U.S. nuclear weapons systems. Others are involved in the French and UK arsenals. The report also profiles companies based in India, and China, yet the limited amount of information available on companies involved in these countries’ arsenals remains a challenge.

Within the analysed period, no investments or financial relations were identified for the Russian company Rostec. For this reason, Rostec has been removed from the list of fully profiled companies and is now included in the watchlist. Since 2023, companies

involved in the production of nuclear armed submarines also fall within this report’s scope (see also the methodology section). Babcock International supports the life extension and modernization of UK nuclear armed submarines and is subcontracted for work on U.S. nuclear armed submarines. Babcock is now added as a fully profiled company.

Northrop Grumman and General Dynamics remain the biggest nuclear weapons profiteers, with outstanding contracts with a potential value of at least \$31 billion and \$24 billion respectively, not including consortia and joint ventures. BAE Systems, Boeing, Leonardo, Lockheed Martin and RTX also hold multi-billion-dollar contracts for nuclear weapons production and/or maintenance.

Financiers

Given their potential largescale and irremediable impact, being linked to the production of nuclear weapons holds salient human rights risks. Yet, banks, pension funds, asset managers and other financial institutions worldwide continue to financially back the nuclear weapons industry. This report identifies 260 financial institutions with significant investment or financing relations with one or more of the 24 nuclear weapons producers. Investors held just under \$514 billion in bonds and shares and almost \$270 billion was provided in loans and underwriting. By making capital available to companies associated with nuclear weapons production, these financial institutions enable the continued development of inhumane and indiscriminate weapons.

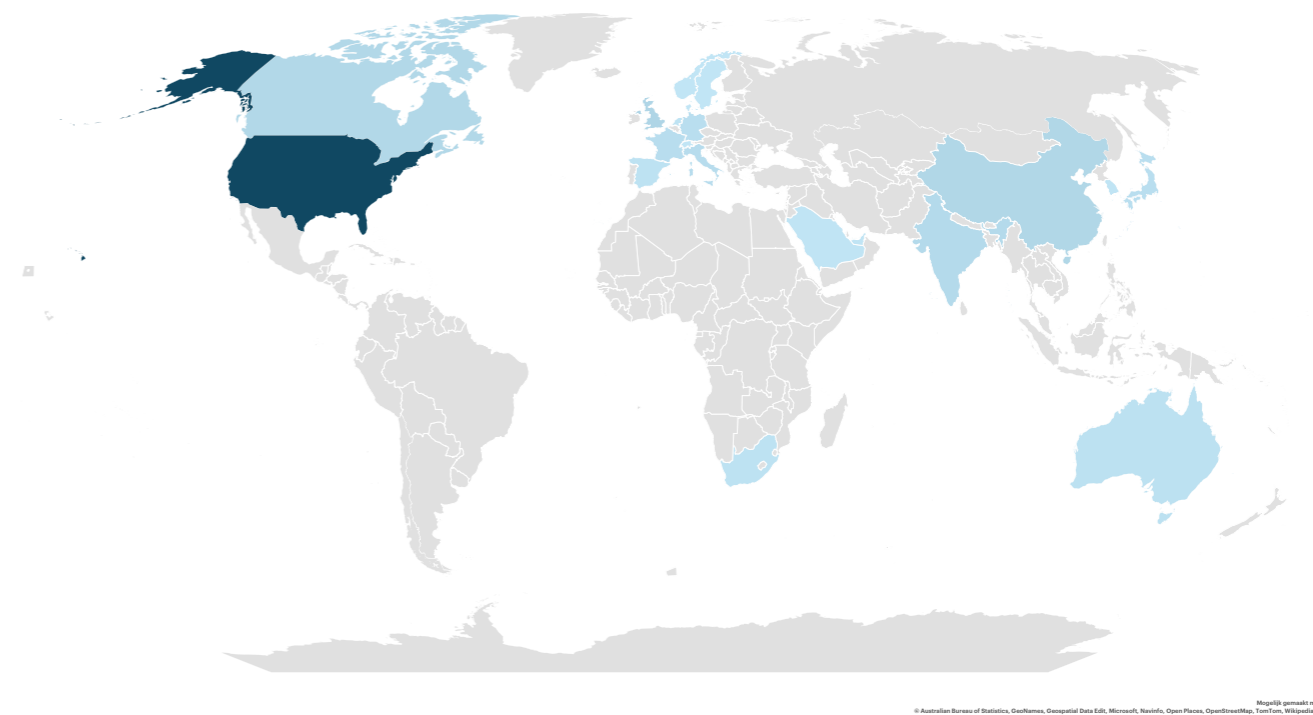
Fortunately, a growing number of financial actors is choosing to actively reject nuclear weapons. At the time of writing, 131 investors have explicitly voiced their support for the Treaty on the Prohibition of Nuclear Weapons (TPNW) and call on states to ensure its obligations are extended to private sector actors.³ Every year since the TPNW entered into force in 2021, the number of institutions identified with significant financial exposure to selected nuclear weapons producers has dropped, from 338 institutions in the 2021 Don’t Bank on the Bomb publication⁴ to 260 in the current analysis.

As central actors to the flow of capital in our global economy, financial institutions are key to driving responsible corporate behaviour. As such, they can and should exert their influence to change the direction of companies who still insist peace and stability are achieved by building more nuclear bombs.

Global financing

Altogether 260 financial institutions were found to have investment or financing relationships with one or more of the 24 nuclear weapons producers, from 24 countries. Most institutions are based in countries that either possess nuclear weapons of their own or otherwise endorse their use. With the exception of four financial institutions (from South Africa), none of the financiers come from countries that have joined the TPNW.

FIGURE 1: MAP OF FINANCIERS GLOBALLY



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Top 10 financiers

With the exception of Sun Life Financial (Canada), the top 10 investors (holding shares or bonds) are all based in the United States. Their combined investments in the 24 nuclear weapon producing companies totals \$350,756 million, more than 68% of all investments.

TABLE 1: TOP 10 INVESTORS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Vanguard	United States	\$78,516	\$72,487	\$6,030
Capital Group	United States	\$73,803	\$62,548	\$11,255
BlackRock	United States	\$57,661	\$53,161	\$4,499
State Street	United States	\$55,449	\$55,503	\$-54
Geode Capital Holdings	United States	\$16,545	\$13,865	\$2,680
Fidelity Investments	United States	\$16,288	\$15,297	\$991
Wellington Management	United States	\$16,002	\$18,712	\$-2,710
Newport Group	United States	\$13,593	\$14,310	\$-717
Sun Life Financial	Canada	\$12,118	\$8,733	\$3,385
Morgan Stanley	United States	\$10,780	\$9,098	\$1,682
GRAND TOTAL		\$350,756	\$323,714	\$27,042

The top 10 creditors provided \$146,731 million in loans and underwriting to the 24 nuclear weapon producing companies, more than 54% of all financing.

TABLE 2: TOP 10 CREDITORS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Bank of America	United States	\$23,909	\$21,838	\$2,070
Citigroup	United States	\$23,119	\$23,685	\$-566
JPMorgan Chase	United States	\$20,163	\$20,451	\$-288
Wells Fargo	United States	\$14,690	\$15,448	\$-758
Goldman Sachs	United States	\$12,290	\$10,250	\$2,040
BNP Paribas	France	\$11,400	\$11,382	\$18
Mizuho Financial	Japan	\$11,394	\$11,720	\$-326
SMBC Group	Japan	\$10,446	\$9,929	\$517
Morgan Stanley	United States	\$10,228	\$7,957	\$2,271
Mitsubishi UFJ Financial	Japan	\$9,092	\$10,106	\$-1,014
GRAND TOTAL		\$146,731	\$142,765	\$3,966

Types of financing compared

Overall bondholding value continued to decrease in 2024, with a drop of \$520 million compared to the 2023 financial analysis. Total shareholding value, on the other hand, went up again in 2024, with an increase of \$37.3 billion compared to previously published results.

TABLE 3: BOND AND SHAREHOLDING COMPARED 2024-2021. ALL FIGURES IN USD MILLIONS

INSTITUTION	2024	2023	2022	2021
Bondholding	\$5,455	\$5,975	\$6,749	\$7,820
Shareholding	\$508,122	\$470,868	\$454,413	\$345,919
GRAND TOTAL	\$513,576	\$476,843	\$461,162	\$353,739

The total amount provided in loans decreased in 2024 with \$16.3 billion compared to previously published findings. The number of lenders has also dropped. Total underwriting, on the other hand, has gone up by \$10.1 billion.

TABLE 4: LOANS AND UNDERWRITING COMPARED 2024-2021.
ALL FIGURES IN USD MILLIONS.

INSTITUTION	2024	2023	2022	2021
Loans	\$205,317	\$221,625	\$180,208	\$211,399
Underwriting	\$64,641	\$54,531	\$105,307	\$120,046
GRAND TOTAL	\$269,958	\$276,155	\$285,515	\$331,445

Full list of financiers

171 financial institutions were found to have significant investments (share and bond holdings) in one or more of the 24 nuclear weapons companies. Only institutions with holdings of at least 0.5% of the total number of outstanding shares or bonds of the profiled companies are listed.

TABLE 5: FULL LIST OF INVESTORS (SHARE AND BONDHOLDING).
ALL FIGURES IN USD MILLIONS

INSTITUTION	COUNTRY	INVESTMENTS
Abrams Bison Investments	United States	\$141
Abrams Capital Management	United States	\$619
Absolute Investment Advisers	United States	\$12
Aditya Birla Capital	India	\$17
Aegon	Netherlands	\$91
Affiliated Managers Group	United States	\$81
Allianz	Germany	\$559
Allspring Global Investments	United States	\$867
American Century Investments	United States	\$117
American National Insurance	United States	\$14
Ameriprise Financial	United States	\$5,209
Anchor Capita	United States	\$50
AQR Capital Management	United States	\$305
Aristotle Capital Management	United States	\$1,853
Aristotle Pacific Capital	United States	\$45
Artisan Partners	United States	\$1,788
Auto-Owners Insurance	United States	\$15
AXA	France	\$10
Axis Bank	India	\$33
Baillie Gifford	United Kingdom	\$102
Baird	United States	\$262
Banco Mediolanum	Italy	\$6
Bank of America	United States	\$10,647
Bank of New York Mellon	United States	\$766
BlackRock	United States	\$57,661
Brandes Investment Partners	United States	\$133
Brookfield Corporation	Canada	\$74
Brown Advisory	United States	\$101
Calamos Investments	United States	\$49
California Public Employees' Retirement System (CalPERS)	United States	\$99
Canada Pension Plan Investment Board	Canada	\$682
Canara Bank	India	\$49
Capital Group	United States	\$73,803
Cartenna Capital	United States	\$51
Causeway Capital Holdings	United States	\$1,958

Charles Schwab	United States	\$6,856
Children's Investment Fund Management	United Kingdom	\$4,306
China Chengtong	China	\$55
China Development Bank	China	\$139
China Southern Asset Management (CSAM)	China	\$24
CI Financial	Canada	\$151
Cincinnati Financial	United States	\$15
Citadel	United States	\$209
Crédit Agricole	France	\$2,579
Deka Group	Germany	\$674
Deutsche Bank	Germany	\$149
Diamond Hill Investment Group	United States	\$334
Dimensional Fund Advisors	United States	\$1,899
Dodge & Cox	United States	\$4,446
Driehaus Capital Holdings	United States	\$23
Envestnet	United States	\$222
Equitable Holdings	United States	\$159
Exor	Netherlands	\$348
Fidelity International	Bermuda	\$664
Fidelity Investments	United States	\$16,288
First Eagle Investments	United States	\$802
First Trust Advisors	United States	\$535
Fisher Investments	United States	\$2,604
Focus Financial Partners	United States	\$141
Franklin Resources	United States	\$7,624
Fullgoal Fund Management	China	\$28
Gabelli Funds	United States	\$214
Geode Capital Holdings	United States	\$16,545
Goldman Sachs	United States	\$931
Government Pension Fund Global (GPF)	Norway	\$2,732
Government Pension Investment Fund (GPIF)	Japan	\$2,892
GQG Partners	United States	\$1,774
Greenhouse Funds	United States	\$109
Groupe BPCE	France	\$5,561
Guggenheim Partners	United States	\$20
HDFC Bank	India	\$257
Hood River Capital Management	United States	\$48
Hotchkis & Wiley Capital Management	United States	\$176
HSBC	United Kingdom	\$95
Huashang Fund Management	China	\$17
Hubei Juyuan Technology Investment	China	\$49
Huihua Fund Management	China	\$114
ICICI Bank	India	\$54
Invesco	United States	\$9,591

Jackson Financial	United States	\$33
Janus Henderson	United Kingdom	\$1,238
JPMorgan Chase	United States	\$7,540
Jupiter Fund Management	United Kingdom	\$108
Knights of Columbus	United States	\$10
Kotak Mahindra Bank	India	\$106
Lazard	Bermuda	\$50
Legal & General	United Kingdom	\$5,287
Life Insurance Corporation of India	India	\$128
Lone Pine Capital	United States	\$359
Lord, Abbett & Co	United States	\$176
LSV Asset Management	United States	\$483
Luther King Capital Management	United States	\$46
M&G	United Kingdom	\$310
Macquarie Group	Australia	\$307
Mahima Stocks	India	\$3
Manulife Financial	Canada	\$111
Marathon-London	United Kingdom	\$339
Mariner Wealth Advisors	United States	\$192
MassMutual Holdings	United States	\$114
Masters Capital Management	United States	\$43
Mawer Investment Management	Canada	\$497
MetLife	United States	\$18
Millennium Management	United States	\$333
Minnesota Mutual Companies	United States	\$10
Mirae Asset Financial Group	South Korea	\$115
Modern Woodmen of America	United States	\$10
Morgan Stanley	United States	\$10,780
Motilal Oswal	India	\$39
National Pension Service	South Korea	\$902
National Western Life Group	United States	\$19
Nationwide Mutual Insurance	United States	\$112
Neuberger Berman	United States	\$162
New China Asset Management	China	\$80
New York Life Insurance	United States	\$54
Newport Group	United States	\$13,593
Ninety One	South Africa	\$220
Nippon Life Insurance	Japan	\$31
Northern Trust	United States	\$2,116
Northwestern Mutual	United States	\$113
Olayan Financing Company	Saudi Arabia	\$683
Ontario Teachers' Pension Plan	Canada	\$506
Orbis Group	Bermuda	\$978
Orix Corporation	Japan	\$2,158
Penghua Fund Management	China	\$32
Perpetual	Australia	\$575
Point72	United States	\$54
Polaris Capital Management	United States	\$51

Power Corporation of Canada	Canada	\$162
Primecap Management	United States	\$2,061
Principal Financial Group	United States	\$311
Prudential Financial (US)	United States	\$1,401
PSG Konsult	South Africa	\$29
Raven's Wing Asset Management	United States	\$8,152
Royal Bank of Canada	Canada	\$1,819
Royal London Group	United Kingdom	\$58
Ruane, Cunniff & Goldfarb	United States	\$779
Rubic Capital Management	United States	\$140
Sanders Capital	United States	\$3,287
Santa Comba	Spain	\$99
Schroders	United Kingdom	\$45
SEI	United States	\$89
Silchester International Investors	United Kingdom	\$1,549
SMBC Group	Japan	\$7
Smith Capital Investors	United States	\$9
Sociedad Estatal de Participaciones Industriales	Spain	\$4,463
Sound Shore Management	United States	\$85
Southern Farm Bureau Life Insurance	United States	\$11
State Farm	United States	\$188
State Street	United States	\$55,449
Sun Life Financial	Canada	\$12,118
T. Rowe Price	United States	\$9,693
The Hartford	United States	\$100
Third Point	United States	\$244
Thrivent Financial	United States	\$105
TIAA	United States	\$3,649
Toronto-Dominion Bank	Canada	\$169
Truffle Asset Management	South Africa	\$24
Two Sigma Investments	United States	\$375
UBS	Switzerland	\$2,493
Van Eck Associates Corporation	United States	\$275
Vanguard	United States	\$78,516
Victory Capital	United States	\$1,051
WCM Investment Management	United States	\$2,058
Wealth Enhancement	United States	\$57
Wellesley Asset Management	United States	\$10
Wellington Management	United States	\$16,002
Wells Fargo	United States	\$4,128
Westchester	United States	\$157
White Mountains Insurance	Bermuda	\$101
White Oak Capital Management	India	\$20
Wintrust Financial Corporation	United States	\$88
GRAND TOTAL		\$513,576

109 financial institutions provided financing in the form of loans or underwriting to one or more of the 24 nuclear weapons companies.

TABLE 6: FULL LIST OF CREDITORS (LOANS AND UNDERWRITING).
ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	LOANS OR UNDERWRITING
Academy Securities	United States	\$393
Alter Domus	Luxembourg	\$205
Amerivet Securities Inc	United States	\$7
ANZ	Australia	\$1,970
Arab Banking Corporation (Bank ABC)	Bahrain	\$58
Banca Monte dei Paschi di Siena	Italy	\$88
Banca Passadore & C,	Italy	\$88
Banca Popolare di Sondrio	Italy	\$108
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$2,906
Banco BPM	Italy	\$300
Bancroft Capital (PA)	United States	\$23
Bank of America	United States	\$23,909
Bank of China	China	\$1,494
Bank of New York Mellon	United States	\$1,244
Barclays	United Kingdom	\$6,439
BayernLB	Germany	\$665
Blaylock Beal Van	United States	\$36
BMO Financial Group	Canada	\$926
BNP Paribas	France	\$11,400
BPER Banca	Italy	\$229
Cabrera Capital	United States	\$4
Caisse des Dépôts et Consignations	France	\$143
Capital One Financial	United States	\$671
CastleOak Securities	United States	\$68
Cathay General Bancorp	United States	\$97
China Merchants Bank	China	\$1,366
CIBC	Canada	\$607
CITIC	China	\$576
Citigroup	United States	\$23,119
Citizens Financial Group	United States	\$411
CL King & Associates	United States	\$17
Comerica	United States	\$608
Commerzbank	Germany	\$2,250
Crédit Agricole	France	\$7,889
Crédit Mutuel	France	\$1,319
CSC Financial	China	\$303
Danske Bank	Denmark	\$350
DBS	Singapore	\$2,475
Deutsche Bank	Germany	\$7,707

Drexel Hamilton	United States	\$28
DZ Bank	Germany	\$321
European Investment Bank	Luxembourg	\$2,237
Export-Import Bank of the United States	United States	\$175
Fifth Third Bancorp	United States	\$1,158
First Abu Dhabi Bank	United Arab Emirates	\$1,624
First Citizens Bank	United States	\$19
First Horizon	United States	\$246
FNB Corporation	United States	\$80
Fuyo General Lease	Japan	\$54
Goldman Sachs	United States	\$12,290
Great Pacific Securities	United States	\$4
Groupe BPCE	France	\$1,607
Hancock Whitney	United States	\$246
HSBC	United Kingdom	\$3,408
Huntington Bancshares	United States	\$134
ICICI Bank	India	\$161
Industrial and Commercial Bank of China	China	\$1,650
ING Group	Netherlands	\$321
Intesa Sanpaolo	Italy	\$885
Investment Corporation of Dubai	United Arab Emirates	\$115
Jefferies Financial Group	United States	\$18
JPMorgan Chase	United States	\$20,163
KfW	Germany	\$178
KKR Group	United States	\$2,089
La Banque Postale	France	\$143
Lloyds Banking Group	United Kingdom	\$2,490
Loop Capital	United States	\$152
M&F Bancorp	United States	\$80
Macquarie Group	Australia	\$1,290
Mediobanca Banca di Credito Finanziario	Italy	\$88
MFR	United States	\$35
Mischler Financial Group	United States	\$72
Mitsubishi UFJ Financial	Japan	\$9,092
Mizuho Financial	Japan	\$11,394
Morgan Stanley	United States	\$10,228
National Australia Bank	Australia	\$555
NatWest	United Kingdom	\$2,503
Northern Trust	United States	\$2,713
Northwestern Mutual	United States	\$616
Penserra Capital Management	United States	\$15
PJT Partners	United States	\$146
PNC Financial Services	United States	\$2,467
R. Seelaus & Co	United States	\$48
Regions Financial	United States	\$709

Riyad Bank	Saudi Arabia	\$1,427
Royal Bank of Canada	Canada	\$6,533
Santander	Spain	\$4,527
SAR Holdings	United States	\$68
Scotiabank	Canada	\$4,476
Shank Williams Cisneros & Co	United States	\$224
Skandinaviska Enskilda Banken	Sweden	\$1,094
SMBC Group	Japan	\$10,446
Société Générale	France	\$3,793
Standard Bank	South Africa	\$74
Standard Chartered	United Kingdom	\$2,289
State Bank of India	India	\$722
State Street	United States	\$485
State Street Capital	United States	\$143
Sun Life Financial	Canada	\$482
Toronto-Dominion Bank	Canada	\$6,073
Truist Financial	United States	\$695
UBS	Switzerland	\$3,212
UniCredit	Italy	\$4,572
Unity National Bank	United States	\$80
US Bancorp	United States	\$5,871
Veritas Capital Fund Management	United States	\$385
Wells Fargo	United States	\$14,690
Westpac	Australia	\$1,060
Zions Bancorporation	United States	\$19
GRAND TOTAL		\$269,958

Introduction

Through personal testimonies and tireless campaigning, 2024 Nobel Peace Laureates Nihon Hidankyo have consistently made one message clear: nuclear weapons cannot coexist with humanity. From the horrific legacy the use and testing of these weapons left around the world to the catastrophic consequences of even a “limited” nuclear war on people’s lives, food supplies and the climate: the human costs of nuclear weapons are devastating.⁵

The Nobel Peace Prize recognition of Nihon Hidankyo’s lifelong efforts has come at a time where risks of nuclear conflict keep rising and states are deepening their reliance on the unprovable theory of nuclear deterrence. This also comes at a high

economic and societal cost. Diverting public funds from health care, education, housing and other vital services, the nuclear armed states together spent an estimated \$91.4 billion on their nuclear arsenals in 2023, a \$23.2 billion increase in the last five years.⁶ In July 2024, the Pentagon agreed to the continued development of the Sentinel, the new U.S. intercontinental ballistic missile (ICBM), in spite of estimated costs rising dramatically to \$140.9 billion, 81% more than the original estimate.⁷

All nine nuclear armed states continue to modernize their nuclear forces. This report provides information and updates about the nuclear weapon systems of five of the nine nuclear armed countries: China, France, India, the United Kingdom and the United States. This includes the abovementioned LGM-35A Sentinel, as well as the French successor to the ASMPA missile, the ASN4G, and the new UK Dreadnought class submarines.

TORCHLIGHT PROCESSION IN OSLO TO HONOUR THE 2024 NOBEL PEACE PRICE LAUREATES NIHON HIDANKYO (PHOTO CREDIT: ICAN | KASPER FOSSER)



The companies building nuclear weapons

Corporations are profiting extensively from the billions spent on these modernization efforts. This report analyses the contracts and activities of 24 companies heavily involved in the nuclear weapons industry. The majority of companies profiled contribute to the production of U.S. nuclear weapon systems. Others are involved in the French or UK arsenals. The report also profiles companies based in India and China, yet the limited amount of information available on companies involved in these countries' arsenals remains a challenge. For other nuclear armed states, including Russia, arsenals are either developed and maintained by companies that are state-owned or controlled, with no other investments or financing relations identified, or there is insufficient publicly available information to identify the relevant companies.

Against the backdrop of wars in Ukraine and the Middle East, European and U.S. defence firms have been the beneficiaries of record levels of military spending.⁸ To build pressure to spend more on arms, companies and EU defence ministers alike have pushed hard for the defence sector's activities to be considered 'sustainable'.⁹ At a first glance, their main pitch appears straightforward: in an increasingly challenging security landscape, companies supplying western militaries with arms are crucial to ensure peace and stability. Yet, what this narrative fails to explain is how the involvement of many defence companies in weapons of mass destruction or arms exports to oppressive governments¹⁰ fits into this picture.

The human rights and environmental risks associated with nuclear weapons production are evident. Additional risks may also arise in relation to the governance practices of various companies profiled in this report. In 2024 alone, Boeing plead guilty to a criminal fraud charge over its failure to make safety improvements after two fatal plane crashes,¹¹ RTX agreed to pay \$950 million in settlements to U.S. authorities over fraud and bribery charges,¹² and the UK Serious Fraud Office (SFO) and the French Parquet National Financier (PNF) launched an investigation into Thales over suspected bribery

and corruption.¹³ It was furthermore reported Airbus remained in contact with a middleman over a controversial Kuwait helicopter deal in 2016 while already under investigation for a massive bribery scheme involving its dealings with intermediaries, for which it paid a record fine in 2020.¹⁴

Moreover, among many U.S. defence firms, including General Dynamics, L3Harris, Lockheed Martin, Northrop Grumman, RTX, Leidos and Huntington Ingalls Industries, there is a growing trend of using capital to repurchase shares in order to boost their value.¹⁵ Such share buybacks have come under increased criticism for prioritizing profits over investing in research and development or production capacity. "[Y]ou can't be asking the American taxpayer to make even greater public investments while you continue, in some cases, to goose your stock prices through stock buybacks, deferring promised capital investments, and other accounting maneuvers", U.S. Navy Secretary Carlos del Toro has said.¹⁶ U.S. Senators have similarly urged UK defence firm BAE Systems to refrain from share buybacks "that divert capital away from important investments".¹⁷

The financial sector and corporate responsible behavior

Under the UN Guiding Principles on Business and Human Rights all business enterprises have a responsibility to respect human rights.¹⁸ This responsibility also applies to financial actors who should avoid causing or contributing to negative impacts on human rights associated with their activities or business relationships.¹⁹ As described above, given nuclear weapons' potential largescale and irremediable impact, being linked to their production holds salient human rights risks. Yet, banks, pension funds, asset managers and other financial institutions worldwide continue to financially back the nuclear weapons industry. This report identifies 260 financial institutions with significant investment or financing relations with one or more of the 24 nuclear weapons producers. Investors held just under \$514 billion in bonds and shares and almost \$270 billion was provided in loans and underwriting. Financiers are predominantly based in countries that include nuclear weapons in their national security strategies.

No space for critical voices?

In December 2024, investor network Shareholders for Change (SfC) filed a complaint with the EU Commission after one of its members was ejected from a conference hosted by the EU Defence Industrial Investment Forum. As highlighted in the complaint, Tommy Piemonte (Bank für Kirche und Caritas), attended the meeting online and posed two written questions in the designated chat during the Q&A session, which critically addressed claims that the arms industry should be labeled as sustainable. When his questions were left unanswered, Mr. Piemonte asked for them to be considered and was subsequently kicked out of the meeting without warning. When readmitted to the event after more than one hour, he was told he was "momentarily removed" for "disrupting the meeting". "This is all the more surprising given that the whole event was about listening to the perspectives of the financial and defence industries" said SfC in a statement about the incident.

By making capital available to companies associated with nuclear weapons production, these financial institutions enable the continued development of inhumane and indiscriminate weapons. Fortunately, a growing number of financial sector actors is choosing to actively reject nuclear weapons. The Treaty on the Prohibition of Nuclear Weapons (TPNW), the first existing international agreement to comprehensively ban nuclear weapons, has now been signed or ratified by half of the UN membership. And it is not only governments standing behind the Treaty: at the time of writing, 131 investors have explicitly voiced their support for the TPNW and call on states to ensure its obligations are extended to private sector actors.²⁰

Every year since the TPNW entered into force in 2021, the number of institutions identified with significant financial exposure to selected nuclear weapons producers has fallen, from 338 institutions in the 2021 Don't Bank on the Bomb publication²¹ to 260 in

the current analysis. Progress can also be seen with investors who are still found to have such exposure. In 2024, Norway's Government Pension Fund, the second largest pension fund in the world²², announced it will exclude L3Harris, Larsen & Toubro and General Dynamics for involvement in nuclear weapon-related activities.²³ While still having substantial holdings in other nuclear weapon producers, this development demonstrates the impact of the global norm against nuclear weapons, even in countries that have not yet signed the TPNW.

As central actors to the flow of capital in our global economy, financial institutions are key to driving corporate responsible behaviour. As such, they can and should exert their influence to change the direction of companies who still insist peace and stability are achieved by building more nuclear bombs.

What this report does

This report profiles the companies most heavily involved in the nuclear weapon industry. It provides information about the contracts they received to provide key components or services to support countries' nuclear arsenals. This report also provides information on the financial actors that finance these companies through providing loans or other corporate financial services. Lastly, it offers a snapshot of the investors that hold shares or bonds in these companies and thus seek to profit from the nuclear industry.

What it doesn't do

This report is not designed to draw a line between every rivet and the nuclear missiles they hold together. The list of companies involved in the nuclear weapon industry included in this report is comprehensive, but not exhaustive. Other companies may still be involved in the development, testing, production, manufacture and stockpiling of nuclear weapons systems. This report provides full profiles of 24 companies and includes a watchlist with additional information about others connected to the nuclear weapons enterprise. This report does not offer investment advice, but many may choose to use the identified list of corporate actors as a guide for their own responsible investing.

24 Nuclear weapon producing companies

This report provides information about known contracts and activities of companies that are involved in the production of key components or services for nuclear weapons. 24 companies are profiled in this report. For a company to be included, it must have investments or financing relations with private financial institutions and produce goods or provide services that specifically contribute to nuclear weapon development, testing, production, manufacture, possession, stockpiling or use. All these activities are outlawed under the Treaty on the Prohibition of Nuclear Weapons (TPNW).

Nuclear bombs may be dropped from airplanes, like the ones used on Hiroshima and Nagasaki. However, most nuclear weapons in the arsenals of the nine countries that possess them are designed to be delivered by missiles launched from the ground, airplanes, or submarines. It is for this reason that this report includes companies involved in producing key components for not only the nuclear warheads, but also the missiles designed specifically to deliver them. Companies involved in the production of nuclear-armed submarines, specifically designed for the delivery of nuclear weapons, also fall within this report's scope.

The majority of companies profiled contribute to U.S. nuclear weapon systems. Others are involved in the French and UK arsenals. The report also profiles companies based in India and China. Where available, information about the contract duration and total estimated value is included. However, one of the challenges in reporting is providing the same level of information for each of the nuclear armed countries. For some arsenals, the availability of this information is relatively straightforward. For others, including those of China and India, it is very difficult to obtain reliable information on the companies and contracts involved. Previous publications also included Russian

manufacturer Rostec. However, as no investments or financial relations were identified for Rostec, it has been moved to the watchlist.

Northrop Grumman and General Dynamics remain the biggest nuclear weapons profiteers, with outstanding contracts with a potential value of at least \$31 billion and \$24 billion respectively, not including consortia and joint ventures. BAE Systems, Boeing, Leonardo, Lockheed Martin and RTX also hold multi-billion-dollar contracts for nuclear weapon production and/or sustainment.

Nuclear armed countries have dedicated facilities for nuclear weapon production, manufacture, testing, stockpiling and development. In several situations, the management and operations of those facilities are outsourced to the private sector, and where information is publicly verifiable, those companies are also included in this report.

There are always companies changing name or changing hands. This report includes updated information about those changes. There is also a section that describes the tangled web of joint ventures and consortia, which also have multi-year multi-billion-dollar contracts within the nuclear weapons enterprise.

For example, millions are paid each year by the French government to the MBDA joint venture between BAE Systems, Airbus and Leonardo to build the next generation of nuclear weapons for France. The Lawrence Livermore National Security Consortium, of which Bechtel is a part, has a \$93.3 billion contract to manage and operate the Lawrence Livermore National Laboratory. The Laboratory is, among others, the lead design agency for the life extension program for the W80-4 warhead (for the U.S. Long-Range Stand-Off cruise missile) and the modification program for the W87-1 warhead (for the new U.S. Sentinel ICBM).²⁴

The goal of this research is to provide information about the many actors involved in perpetuating nuclear weapons. The nuclear weapons associated companies profiled in this report are already included on the exclusion lists of numerous financial institutions as well as some indices. The hope is that this report provides further information for those who choose to avoid supporting the companies that contribute to the indefinite retention of nuclear weapons.

Changes from previous reports

NO LONGER FULLY LISTED

Rostec

Within the analyzed period, no investments or financial relations were identified for Rostec. For this reason, the company is now included in the watchlist.

NEW FULL PROFILES IN THIS REPORT

Babcock International (United Kingdom)

Since 2023, companies involved in the production of nuclear armed submarines also fall within this report's scope (see also the methodology section). Babcock International supports the life extension and modernization of UK nuclear-armed submarines and is subcontracted for work on U.S. nuclear-armed submarines, and has now been added to the list of companies fully profiled.

ADDED TO THE WATCHLIST

In earlier Don't Bank on the Bomb analyses, **BWX Technologies (BWXT) (United States)** was listed as a fully profiled company, among others for its involvement in missile tube assemblies for nuclear armed submarines, which ended in 2023.²⁵ Since October 2024, the joint venture PanTexas Deterrence, led by BWXT, manages and operates the Pantex Plant - the primary U.S. site for nuclear weapons assembly.²⁶ Other new names on the watchlist are **Atos (France)**, **CAE (Canada)**, **Clark Construction (United States)**, **MTAR Technologies (India)**, and **Penguin Solutions (United States)**. A brief description of their activities can be found below.

Watchlist

The 24 companies fully profiled in this report are heavily involved in the nuclear weapons industry through building key components for nuclear weapons or otherwise contributing to nuclear weapon development, manufacture, possession, stockpiling or use: acts that are all prohibited under the Treaty on the Prohibition of Nuclear Weapons (TPNW).

Still, there are other companies involved in activities prohibited by the TPNW, for example the building of facilities to enable any stationing, installation, or

deployment of nuclear weapons on the national territory of other countries. Some of them are included in the watchlist. The watchlist also includes companies for which ties to the nuclear weapons enterprise have been identified, but who act as subcontractors or for whom sufficient details verifying their involvement are not available. For other companies, no investments or financing relations with private financial institutions were identified (this is often the case for companies that are privately-held), but information may still be of interest. For financial institutions and others seeking to implement comprehensive exclusions from any nuclear weapon associated company, the watchlist should, at a minimum, trigger additional due diligence.

The profiles included in the watchlist are not a comprehensive review of companies of this nature. Rather, they are examples of companies also involved in the nuclear weapon industry.

Amentum (United States)

Amentum is the U.S. government services company that spun off from AECOM in 2020.²⁷ It is part of the team managing and operating the Lawrence Livermore National Laboratory²⁸ and has performed readiness assessments at the Los Alamos National Laboratory²⁹, responsible for nuclear weapons design and maintenance.³⁰ Amentum works "across all the key sites that enable the UK's continuous-at-sea deterrent (CASD) program, including HMNB Clyde, home base for the Royal Navy's operational submarines; HMNB Devonport, the largest naval base in Western Europe, BAE Systems Maritime in Barrow-in-Furness, where the Royal Navy's submarines are built, at Rolls-Royce Nuclear in Derby, where submarine reactors are manufactured, and the Atomic Weapons Establishment in Berkshire, which is responsible for nuclear warhead design and manufacturing."³¹ Amentum also provides "essential through-life technical support" for nuclear reactors for UK submarines, including the nuclear armed Vanguard and Dreadnought class submarines.³² When launched as an independent company in 2020, Amentum became privately held, with the equity firms American Securities and Lindsay Goldberg as equal partners.³³ However, in September 2024, Amentum completed a merger with Jacobs Solutions' Critical Mission Solutions (CMS) and Cyber & Intelligence (C&I) Businesses, where the combined organization will be

a publicly traded company.³⁴ The merger also includes Jacobs' former involvement in the Mission Support and Test Service (MSTS) consortium that manages and operates the U.S. Nevada National Security Site.³⁵ However, as the findings of this report are based on financial data retrieved before September 2024, the effects of this merger are not taken into account for this report's selection of fully profiled companies.

Arcfield (United States)

Arcfield, a privately-held company, was launched in 2021, comprising Peraton's spun off systems engineering, integration and support services business, acquired by a branch of private equity firm Veritas Capital.³⁶ Arcfield "provides support for a wide range of nuclear deterrence and hypersonic missions in the U.S. and abroad through advanced modeling, simulation and analysis powered by proprietary systems engineering and integration tool sets and launch support services".³⁷ It has an outstanding contract for program support services for the Trident re-entry subsystem.³⁸

Atlantic CommTech Corp (United States)

In July 2022, Atlantic CommTech Corp was awarded a contract by the U.S. Air Force for "engineering services and technical expertise as needed to improve sustainability, extend service life of WS3 [Weapon Storage and Security System], and ensure systems continue to meet US Air Force in Europe and NATO requirements".³⁹ While the current description of the contract on the U.S. Department of Defense website adds that work will be carried out "in various overseas locations", other descriptions explicitly mention the Lakenheath Airbase in the United Kingdom⁴⁰, which will reportedly again become a storage location for U.S. nuclear bombs⁴¹. The contract has a potential value of \$14.4 million and work is expected to be complete by July 2025.⁴²

Atos (France) New!

Atos is a European multinational information technology company, headquartered in France.⁴³ Atos builds the exascale supercomputers used by the UK Atomic Weapons Establishment (AWE) for nuclear simulations.⁴⁴

Banda Group International (United States)

Banda Group International is a technical and project management support company serving government

and private sector clients.⁴⁵ Banda Group holds an \$18.7 million contract for nuclear explosive safety by the US Department of Energy.⁴⁶ The contract description indicates that it includes efforts to maintain and enhance the safety, security, and reliability of the U.S. nuclear weapons stockpile.⁴⁷ Banda Group's responsibilities have not been assessed to provide key components to facilitate nuclear weapon use, but rather to provide trainings and safety controls to ensure that nuclear weapons are not accidentally detonated.⁴⁸

Battelle Memorial Institute (United States)

Battelle takes part in the management of several U.S. facilities involved in nuclear weapon modernisation and new warhead production: Lawrence Livermore National Laboratory, the Los Alamos National Laboratory and the Savannah River National Laboratory.⁴⁹ Battelle has worked on numerous contracts, but is established as a non-profit organisation and not externally or privately financed.⁵⁰

Booz Allen Hamilton Holding Corp (United States)

Booz Allen Hamilton is a teaming subcontractor for the Consolidated Nuclear Security (CNS) Joint Venture⁵¹ that manages and operates the Y-12 National Security Complex and, until October 2024, managed and operated the Pantex Plant⁵², where U.S. nuclear weapons are assembled.⁵³ In August 2024, Booz Allen Hamilton was also contracted by the U.S. Air Force for program management services for the Sentinel, the new U.S. intercontinental ballistic missile.⁵⁴ The contract has a potential value of \$82.7 million.⁵⁵

BWX Technologies (United States) New!

BWX Technologies (BWXT) supplies nuclear components and fuel to the U.S. government and commercial clients.⁵⁶ Under a \$300 million contract, BWXT manufactures and delivers naval reactors for U.S. submarines, including the nuclear armed Ohio and Columbia-class submarines.⁵⁷ In earlier Don't Bank on the Bomb analyses, BWXT was listed as a fully profiled company, among others for its involvement in missile tube assemblies for nuclear armed submarines, which ended in 2023.⁵⁸ BWXT now also leads PanTexas Deterrence, the joint venture that manages and operates the Pantex Plant - the primary U.S. site for nuclear weapons assembly - since October 2024.⁵⁹ Furthermore, BWXT is part of the Lawrence Livermore National Security consortium,

that manages and operates the Lawrence Livermore National Laboratory, the lead design agency for the life extension program for the life extension W80-4 cruise missile warhead (for the Long Range Standoff Weapon)⁶⁰ and the modification program of the W87-1 warhead (for the Sentinel ICBM)^{61, 62} Financial data on BWXT was not available in our research timeline.

CAE (Canada) New!

CAE is a defence company, headquartered in Canada.⁶³ As a subcontractor in the team led by Northrop Grumman, it develops and supports operations, maintenance and security forces training for the Sentinel, the new U.S. intercontinental ballistic missile.⁶⁴

Charles Stark Draper Laboratory (United States)

Charles Stark Draper Laboratory (CSDL) is a U.S.-based non-profit research and development organization⁶⁵ that has been involved in the intercontinental ballistic missiles (ICBM) development of the United States since the 1950s.⁶⁶ CSDL is not open to external investors but is significantly involved in research and design for U.S. and UK Trident II (D5) missiles.⁶⁷ According to the U.S. Department of Defense, "CSDL possesses the unique knowledge of the total Trident Guidance system including its design and use on the Trident II weapon system."⁶⁸ There are several outstanding contracts between the U.S. and CSDL for Trident-related components, with the estimated total value exceeding \$5.5 billion.⁶⁹ They ensure work through at least 2029.⁷⁰

China National Nuclear Corporation (China)

China National Nuclear Corporation (CNNC) is a state-owned enterprise responsible for both civilian and military nuclear activities.⁷¹ CNNC, established in 1988 by the State Council⁷², is the successor of the Ministry of Nuclear Security, which built China's first atomic bomb, the first hydrogen bomb, and the first nuclear submarine.⁷³ The China Council for the Promotion of International Trade (CCPIT) promotes CNNC as the core of China's nuclear deterrence.⁷⁴ It adds that the company developed atomic and hydrogen weapons and that "CNNC is the main part of China's nuclear science and technology advancement [...] and the major force of nuclear power development".⁷⁵

Clark Construction (United States) New!

Clark Construction is one of the largest building and infrastructure companies in the United States.⁷⁶ As a subcontractor in the Northrop Grumman-led team Clark Construction provides infrastructure program management services for the Sentinel, the new U.S. intercontinental ballistic missile.⁷⁷

Day & Zimmermann (United States)

Day & Zimmermann is a privately-held company specializing in construction & engineering, operations & maintenance, staffing, security and defence.⁷⁸ Its subsidiary SOC LLC is one of the member companies of Consolidated Nuclear Security and PanTexas Deterrence, providing Safeguards, Security, and Emergency Services for the U.S. sites Y-12 and the Pantex Plant respectively.⁷⁹

Hewlett Packard Enterprise (United States)

In November 2024, Hewlett Packard Enterprise Cray delivered to the U.S. Department of Energy the exascale high-performance supercomputer, 'El Capitan'.⁸⁰ The system "will allow the United States to maintain a competitive edge in national security and will enable the National Nuclear Security Administration's (NNSA) Tri-Labs - LLNL, Sandia National Laboratories and Los Alamos National Laboratory - to meet the increasingly demanding requirements for ensuring the safety, security and reliability of the nation's nuclear stockpile and perform current and future stockpile modernization".⁸¹ El Capitan will also provide new and faster 3D simulation and modelling capabilities,⁸² and will offer advanced computational tools for scientists and weapon designers to study the use of new materials and components.⁸³

Groupe REEL (France)

Groupe REEL is a family company, with approximately 3% owned by its employees through a mutual fund.⁸⁴ In September 2022, Groupe REEL took over the operations of Constructions Industrielles de la Méditerranée (CNIM).⁸⁵ CNIM is the main subcontractor for the M51 missile integration for the French nuclear-armed submarines.⁸⁶ REEL has also designed specific equipment, notably for the assembly and loading of missiles for nuclear armed submarines.⁸⁷

HDT Global (United States)

HDT Global is a U.S.-based company involved in military, government, industrial, and commercial markets.⁸⁸ It is owned by private equity investor Nexus.⁸⁹ HDT Global will provide the transportation systems for the Sentinel, the new U.S. intercontinental ballistic missile, as part of a Northrop Grumman-led team.⁹⁰

Kratos Defense and Security Solutions (United States)

Kratos Defense and Security Solutions is a U.S.-based technology, products, system and software company for defence, national security, and commercial markets.⁹¹ As a subcontractor, Kratos provides vehicle transporters for the Sentinel, the new U.S. intercontinental ballistic missile, with Northrop Grumman as the prime contractor.⁹²

Larsen & Toubro (India)

Larsen & Toubro Limited (L&T), is a technology, engineering, construction, manufacturing and financial services conglomerate.⁹³ Since 2021, L&T claims it does not “manufacture any explosives or ammunition of any kind, including [...] nuclear weapons or components of such munitions” nor any delivery systems.⁹⁴ However, until at least March 2023, L&T’s website stated it designed and produced the launch system for the Dhanush (nuclear-capable) short range ballistic missile.⁹⁵ L&T continues to operate a Strategic Systems Complex (SSC) in Maharashtra, where it produces “Strategic Weapon Platforms, Sensors and Military Engineering Systems”.⁹⁶ Yet, it is unclear whether these platforms, sensors and systems are specifically designed for the Indian nuclear arsenal. L&T also built the hull for India’s first nuclear armed ballistic missile submarine, the INS Arihant⁹⁷ The submarine was jointly developed by the Indian Navy, Bhabha Atomic Research Centre (BARC) and Defence Research and Development Organisation (DRDO), and built under the Advanced Technology Vessel (ATV) project, key to India’s aim for a naval nuclear weapons capacity.⁹⁸ Due to the lack of clarity around L&T’s current involvement in nuclear weapons, several financial institutions continue to exclude the company, as well as its subsidiary Mindtree, for nuclear weapons involvement.⁹⁹

MTAR Technologies (India) New!

MTAR Technologies is an Indian company that develops and manufactures components and equipment for the defence, aerospace, nuclear and clean energy sectors.¹⁰⁰ Its website states it provides base shroud assembly for India’s nuclear-capable Agni ballistic missiles.¹⁰¹ MTAR has also contributed to the development of the nuclear-capable Prithvi missile¹⁰², but no further details around its involvement were identified.

Moog, Inc. (United States)

Moog Inc. is a worldwide designer, manufacturer and systems integrator of high performance precision motion and fluid controls and controls systems for a broad range of applications in aerospace and defence, and industrial markets.¹⁰³ Moog has an outstanding contract with the U.S. Department of Defence to replace the arm/disarm switches on the Minuteman III weapon system.¹⁰⁴ Moog also supplies components for submarine programs across the globe, including the Columbia class (U.S.) and Dreadnought-class (UK) nuclear armed submarines, but it is unclear whether these are specifically designed for SSBNs.¹⁰⁵ It also includes information on its website about producing electrohydraulic TVC systems for the Trident system, but no current contracts were identified.¹⁰⁶ Moreover, this part is also usable in devices that are not specifically designed for nuclear weapons. Some financial institutions choose to exclude Moog for this and for the legacy involvement in the Trident D5 system the company advertises on its website.¹⁰⁷

N3B Los Alamos (United States)

N3B is a limited liability company owned by HII Nuclear, a subsidiary of Huntington Ingalls Industries, and BWX Technologies, joined by critical subcontractors Longenecker & Associates and Tech2 Solutions.¹⁰⁸ It holds a contract for environmental remediation services at the Los Alamos National Laboratory.¹⁰⁹ While not a nuclear weapon producer, it is listed here to illustrate the complexity around some nuclear weapon associated contracts. This joint venture is involved in clean-up, but also involves companies engaged in production of key components for nuclear weapons.

Naval Group (France)

Naval Group is a French Public Limited Company, whose capital is held by the French State (62.25%),

the company Thales (35%), the company Naval Group Actionnariat (owned by Naval group)(0.99%), and former and current employees (indirectly 1.74% and directly 0.02%).¹¹⁰ Naval Group is a prime contractor for the French Navy and is currently developing a third-generation nuclear armed submarine for France.¹¹¹ The programme is planning to replace the four Le Triomphant nuclear armed submarines, with delivery starting in 2035.¹¹² Naval group is also the prime contractor for the M51 missile integration for the French nuclear armed submarines.¹¹³

Penguin Solutions (United States) New!

Penguin Solutions operates in the areas of advanced computing, integrated memory and LED.¹¹⁴ Its website mentions a three-year contract to provide high-performance computing clusters to the U.S. Department of Energy for its Advanced Simulation and Computing (ASC) program for “its mission to ensure the safety, security and reliability of the nation’s nuclear deterrent without underground testing.”¹¹⁵ but further details are not available. The program brings together the computing capabilities and expertise at Lawrence Livermore National Laboratory, Los Alamos National Laboratory and the Sandia National Laboratories.¹¹⁶

Rostec (Russia)

Rostec is a Russian state-owned company, involved in aircraft engineering, engine manufacture, arms production, medical equipment, and biotech among others.¹¹⁷ Rostec produces the Iskander-M nuclear-capable missile system.¹¹⁸ SpecChemistry JSC, one of the Rostec entities, produces over 80% of necessary components for Russian missiles.¹¹⁹ Another entity of Rostec, United Aircraft Corporation (UAC) developed the Tupolev Tu-160M strategic missile-carrying bomber aircraft.¹²⁰ This upgraded version of the supersonic Tu-160 bomber can carry missiles with both conventional and nuclear warheads¹²¹, and is assumed to serve as a key component of Russia’s nuclear triad.¹²² No investments or financial relations were identified for Rostec.

Strategic Management Solutions (United States)

Strategic Management Solutions LLC (SMSI) is a U.S.-based company providing expert management and technical consulting services.¹²³ Its clients have included, among others, Los Alamos National Laboratory, Lawrence Livermore National Laboratory,

Savannah River Site, Sandia National Laboratory, the Pantex & Y-12 National Security Sites, and the Nevada National Security Site.¹²⁴ The role played by this company appears to be primarily one of project management.¹²⁵ In April 2024, SMSI was acquired by private equity firm Bernhard Capital Partners.¹²⁶

Systems Planning and Analysis Inc. (United States)

Systems Planning and Analysis Inc. (SPA) is a privately-held U.S. government contracting firm working across the defence, intelligence and homeland security markets.¹²⁷ SPA describes itself as a “critical partner” to the U.S. Navy’s nuclear armed Columbia Class submarine program since 2005, contributing “across all aspects of technology development, design, manufacturing and readiness”, and mentions that it provides expertise to Nuclear Command, Control and Communications.¹²⁸ Under a \$92.9 million contract, SPA provides support and engineering services related to the Trident II (D5) programme.¹²⁹ SPA also provides engineering and programmatic support for nuclear weapons system safety.¹³⁰

TechnicAtome (France)

TechnicAtome is a public limited company, 50,32% of whose capital is held by APE (Agence des Participations de l’Etat), 20,32% by NAVAL Group, 20,32% by the CEA (Commissariat à l’Énergie Atomique et aux Énergies Alternatives) and 9,03% by the company EDF.¹³¹ It is involved in the new French nuclear ballistic missile submarine programme (SNLE 3G).¹³² The programme is aimed at replacing the four Le Triomphant nuclear armed submarines, with delivery starting in 2035.¹³³ TechnicAtome is also involved in the Laser Megajoule programme, which simulates French nuclear testing.¹³⁴

Volat (Belarus)

Volat (Minsk Wheel Tractor Plant Open Joint Stock Company) is a manufacturer of heavy off-road vehicles.¹³⁵ It produces the mobile launchers for the Russian Topol missiles.¹³⁶ The company is wholly owned by the Republic of Belarus.¹³⁷

Joint ventures

There are numerous joint ventures and consortia operating across the global nuclear weapons industry. Each of these are named in the various producer profiles, but this section provides a listing showing their composite parts.

JOINT VENTURE/ CONSORTIUM NAME	COMPANIES INVOLVED	CONTRACTED FOR
ArianeGroup	Airbus and Safran ¹³⁸	M51 submarine-launched ballistic missile (France) ¹³⁹
Consolidated Nuclear Security (CNS)	Bechtel, Leidos, ATK Launch Systems (part of Northrop Grumman), SOC and Booz Allen Hamilton ¹⁴⁰	Y-12 National Security Complex ¹⁴¹ , responsible for (re) manufacture of components for the B61-12 gravity bomb ¹⁴² , the life extension program of the W88(Trident) ¹⁴³ and the W80 (Long Range Standoff Weapon) ¹⁴⁴ nuclear warheads, and the modification program of the W87-1 nuclear warhead (Sentinel) ¹⁴⁵ .
Lawrence Livermore National Security partnership	Bechtel National, University of California, BWX Technologies, Amentum and teaming subcontractor Battelle Memorial Institute. ¹⁴⁶	Lawrence Livermore National Laboratory, the lead design agency for the life extension program for the W80-4 cruise missile warhead (Long Range Standoff Weapon) ¹⁴⁷ and the modification program of the W87-1 warhead (Sentinel ICBM) ^{148, 149}
MBDA	Airbus, BAE Systems and Leonardo ¹⁵⁰	ASMPA and ASN4G cruise missiles (France) ¹⁵¹
Mission Support & Test Services (MSTS)	Honeywell International, Jacobs Solutions, and HII nuclear Inc (Huntington Ingalls Industries subsidiary) ¹⁵²	Nevada National Security Site, used for tests that "provide data relevant to improving [...] predictive capability, assessing the current stockpile and certifying the future stockpile" ¹⁵³
National Technology and Engineering Solutions of Sandia	Wholly owned subsidiary of Honeywell International. ¹⁵⁴	Sandia National Laboratories (US), the design and engineering lab for the B61-12 gravity bomb ¹⁵⁵ , the W88 Alt 37 warhead ¹⁵⁶ and the new W39/Mk7 program ¹⁵⁷ (both for the Trident), the W80-4 warhead life extension (Long Range Standoff Weapon) ¹⁵⁸ , and the physics and engineering lab for the W87-1 warhead (Sentinel ICBM) ^{159, 160}
PanTexas Deterrence	BWX Technologies Inc; Fluor; SOC, A Day & Zimmermann Company; and The Texas A&M University System. ¹⁶¹	The Pantex Plant, responsible for producing high explosives, requalifying the B61 and W80-1 pits, and final assemblies of the B61-12 gravity bomb ¹⁶² , the W88 Alt 37 warhead (Trident) ¹⁶³ , the W80-4 warhead (Long Range Standoff Weapon) ¹⁶⁴ , and the W87-1 warhead (Sentinel ICBM) ¹⁶⁵ .
Roxel	MBDA and Safran subsidiary Herakles ¹⁶⁶	ASMPA cruise missile (France) ¹⁶⁷
Savannah River Nuclear Solutions (SRNS)	Fluor and Newport News Nuclear (part of Huntington Ingalls Industries) ¹⁶⁸	Savannah River Site, responsible for the testing, evaluating, and replenishing the gas transfer systems for the W80-4 warhead (Long Range Standoff Weapon) ¹⁶⁹ and the W87-1 warhead modification program (Sentinel) ¹⁷⁰ . The site is also responsible for testing, evaluating and replenishing the tritium system for the B61-12 gravity bomb ¹⁷¹ and produces plutonium pits. ¹⁷²
Triad National Security LLC	Battelle Memorial Institute, the University of California and, the Texas A&M University System, with Fluor and Huntington Ingalls Industries as integrated subcontractors. ¹⁷³	Los Alamos National Laboratory, the design and engineering lab for the B61-12 gravity bomb ¹⁷⁴ , and the W88 Alt 37 warhead ¹⁷⁵ and the new W39/Mk7 program ¹⁷⁶ (both for the Trident). The laboratory also produces plutonium pits and is responsible for the production of detonators for the W80-4 warhead (Long Range Standoff Weapon) ¹⁷⁷ and the W87-1 warhead modification program (Sentinel ICBM) ¹⁷⁸ .



THE AIR FORCE NUCLEAR WEAPONS CENTER CONDUCTED ITS FIRST FULL-SCALE STATIC TEST FIRE OF THE LGM-35A SENTINEL STAGE-ONE SOLID ROCKET MOTOR AT THE NORTHROP GRUMMAN TEST FACILITY IN PROMONTORY, UTAH, MARCH 2, 2023 (U.S. AIR FORCE PHOTO BY R. NIAL BRADSHAW)

Full company profiles

This section includes a company-by-company review. For an overview per weapon system, see the Annex.

Included in each section:

Company profile

Contact information

Nuclear Weapons involvement

Financiers table

1. Airbus Group (The Netherlands)
2. Babcock International (United Kingdom)
3. BAE Systems plc (United Kingdom)
4. Bechtel (United States)
5. Bharat Dynamics Limited (India)
6. Boeing (United States)
7. China Aerospace Science and Technology (China)
8. Fluor (United States)
9. General Dynamics (United States)
10. Honeywell International (United States)
11. Huntington Ingalls Industries (HII) (United States)
12. Jacobs Solutions (United States)
13. L3Harris Technologies (United States)
14. Leidos (United States)
15. Leonardo (Italy)
16. Lockheed Martin (United States)
17. Northrop Grumman (United States)
18. Peraton (United States)
19. RTX (United States)
20. Rolls-Royce (United Kingdom)
21. Safran (France)
22. Textron (United States)
23. Thales (France)
24. Walchandnagar Industries Limited (India)

1. Airbus Group (The Netherlands)

COMPANY PROFILE

Airbus is headquartered in the Netherlands but has its main production facilities in Germany, France and Spain.¹⁷⁹ It is involved in the commercial aircraft, helicopter, defence and space sectors.¹⁸⁰ The company is partially state-owned by France (10.86%), Germany (10.84%) and Spain (4.09%), with the rest of its shares held by the public.¹⁸¹ Airbus is the prime contractor for ballistic missiles used in the French nuclear arsenal through its participation in ArianeGroup and MBDA. ArianeGroup is a joint venture, equally owned by Airbus and French company Safran¹⁸², and MBDA is a joint venture between BAE Systems (37.5%), Airbus (37.5%) and Leonardo (25%).¹⁸³ For the year ending 31 December 2023, Airbus Group generated revenues of € 65.4 billion.¹⁸⁴

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NUCLEAR WEAPONS

MBDA France, in which Airbus has a 37.5% stake, is the prime contractor for the ASMPA medium-range air-to-ground nuclear armed cruise missile for the French nuclear arsenal.¹⁸⁵ MBDA is also contracted by the French government for work related to development of the ASMPA-successor, the ASN4G.¹⁸⁶ The new weapon is scheduled to enter service in 2035 with a range exceeding 1,000km, double that of the ASMPA,¹⁸⁷ and will incorporate new hypersonic technologies.¹⁸⁸

Airbus, as part of ArianeGroup, is the main contractor for the M51 submarine-launched ballistic missiles.¹⁸⁹ ArianeGroup states that its role in the M51 production covers “the programme’s entire lifecycle, including upstream studies, development, production and through-life support and maintaining operational readiness, to dismantling the systems when they are decommissioned”.¹⁹⁰ Through ArianeGroup, Airbus is also contracted for the development of the third version of the ballistic missile, the M51.3, to be completed around 2025.¹⁹¹

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 7: FINANCING AND INVESTMENT RELATIONSHIPS WITH AIRBUS GROUP

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
ANZ	Australia	\$143			
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$498			
Bank of America	United States	\$424			
Bank of China	China	\$424			
Barclays	United Kingdom	\$498			
BayernLB	Germany	\$321			
BlackRock	United States				\$4,843
BNP Paribas	France	\$498			
Caisse des Dépôts et Consignations	France	\$143			
Canada Pension Plan Investment Board	Canada				\$682
Capital Group	United States				\$10,353
Citigroup	United States	\$640			
Commerzbank	Germany	\$321			

Crédit Agricole	France	\$640			\$1,930
Crédit Mutuel	France	\$321			
DBS	Singapore	\$321			
Deka Group	Germany				\$674
Deutsche Bank	Germany	\$498			
DZ Bank	Germany	\$321			
European Investment Bank	Luxembourg	\$947			
Fidelity Investments	United States				\$1,139
Goldman Sachs	United States	\$321			
GQG Partners	United States				\$852
Groupe BPCE	France	\$498			
HSBC	United Kingdom	\$498			
Industrial and Commercial Bank of China	China	\$424			
ING Group	Netherlands	\$321			
Invesco	United States				\$752
JPMorgan Chase	United States	\$498			
KfW	Germany	\$178			
La Banque Postale	France	\$143			
Lloyds Banking Group	United Kingdom	\$424			
MassMutual Holdings	United States			\$60	
Mitsubishi UFJ Financial	Japan	\$394			
Mizuho Financial	Japan	\$498			
Morgan Stanley	United States	\$321	\$390		
NatWest	United Kingdom	\$394			
Primecap Management	United States				\$825
Royal Bank of Canada	Canada	\$498			
Santander	Spain	\$640			
Skandinaviska Enskilda Banken	Sweden	\$424			
SMBC Group	Japan	\$498			
Sociedad Estatal de Participaciones Industriales	Spain				\$4,463
Société Générale	France	\$498			
Standard Chartered	United Kingdom	\$143			
State Street	United States	\$143			
State Street Capital	United States	\$143			
TIAA	United States				\$625
Toronto-Dominion Bank	Canada	\$321			
UBS	Switzerland	\$321			
UniCredit	Italy	\$498			
Vanguard	United States				\$2,628
Wellington Management	United States				\$636
Wells Fargo	United States	\$143			
Westpac	Australia	\$143			
White Mountains Insurance	Bermuda			\$48	
GRAND TOTAL		\$16,276	\$390	\$108	\$30,402

2. Babcock International (United Kingdom)

COMPANY PROFILE

Babcock International is an international defence, aerospace and security company delivering engineering, support and critical systems to defence and civil markets.¹⁹² Babcock supports the maintenance and modernization of UK nuclear armed submarines and is subcontracted for work on U.S. nuclear armed submarines. For the year ending 31 March 2024, Babcock reported revenues of £4.4 billion.¹⁹³

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NUCLEAR WEAPONS

Babcock sustains the entirety of the UK's submarine fleet, including by delivering through-life support and life extension of the UK nuclear armed Vanguard class submarine.¹⁹⁴ In 2021, Babcock received a £3.5 billion,

five-year contract with the UK Ministry of Defence for naval base operations, including at the HMNB Clyde, where UK nuclear armed submarines are stationed.¹⁹⁵ In November 2023, Babcock received a four-year, £750 million contract for the delivery of infrastructure to "support the future capability of the Royal Navy and the UK's Defence Nuclear Enterprise"¹⁹⁶ and was awarded two further contracts for work on the UK nuclear armed Dreadnought class submarines, with a combined value of £120 million.¹⁹⁷ In 2023, Babcock also completed the maintenance and life-extension programme for the HMS Vanguard and returned it to the Royal Navy.¹⁹⁸ Under a £560 million contract, awarded in March 2024, Babcock will modernize the second of the Vanguard class, the HMS Victorious, to enable it to continue operational patrols "well into the 2030s".¹⁹⁹

In June 2020, Babcock was also subcontracted by General Dynamics to provide an additional 18 tactical Missile Tube Assemblies for both the UK Dreadnought and the U.S. Columbia-class submarines, designed to be armed with Trident nuclear weapons.²⁰⁰

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 8: FINANCING AND INVESTMENT RELATIONSHIPS WITH BABCOCK INTERNATIONAL

INSTITUTION	COUNTRY	LOANS	BONDHOLDING	SHAREHOLDING
Abrams Bison Investments	United States			\$141
Aegon	Netherlands			\$53
Affiliated Managers Group	United States			\$81
Allianz	Germany		\$9	
Ameriprise Financial	United States			\$24
ANZ	Australia	\$106		
AXA	France		\$10	
Baillie Gifford	United Kingdom			\$102
Barclays	United Kingdom	\$106		
BlackRock	United States		\$53	\$64
BNP Paribas	France	\$106		
Brookfield Corporation	Canada			\$74
Capital Group	United States			\$94
Dimensional Fund Advisors	United States			\$46

Driehaus Capital Holdings	United States			\$23
Fidelity International	Bermuda			\$155
Fidelity Investments	United States			\$28
Franklin Resources	United States			\$78
Goldman Sachs	United States			\$23
Government Pension Fund Global (GPGF)	Norway			\$36
Groupe BPCE	France			\$24
HSBC	United Kingdom	\$106		
Invesco	United States			\$126
JPMorgan Chase	United States	\$106		
Jupiter Fund Management	United Kingdom			\$108
Legal & General	United Kingdom		\$27	\$38
Lloyds Banking Group	United Kingdom	\$106		
NatWest	United Kingdom	\$712		
Polaris Capital Management	United States			\$51
PSG Konsult	South Africa			\$29
Santa Comba	Spain			\$99
Santander	Spain	\$106		
Schroders	United Kingdom			\$45
Silchester International Investors	United Kingdom			\$120
SMBC Group	Japan	\$106		
Sun Life Financial	Canada			\$66
Truffle Asset Management	South Africa			\$24
Van Eck Associates Corporation	United States			\$19
Vanguard	United States			\$70
Wellington Management	United States			\$86
GRAND TOTAL		\$1,561	\$99	\$1,927

ROYAL NAVY SUBMARINE HMS VICTORIOUS DEPARTS HMNB CLYDE (PHOTO CREDIT: LA(PHOT) WILL HAIGH, MOD CROWN COPYRIGHT)



3. BAE Systems plc (United Kingdom)

COMPANY PROFILE

BAE Systems, based in the UK, is a defence company operating in the air, maritime, land, space, electronics, future technologies and cyber domains.²⁰¹ BAE Systems has a 37.5% stake in the MBDA joint venture with Airbus and Leonardo.²⁰² MBDA is the prime contractor for the French ASMPA and ASN4G missiles. BAE Systems also supports the sustainment of the U.S. ICBM inventory, is contracted for work on the submarine-launched Trident missiles and builds the new UK Dreadnought class submarines. In the financial year ending 31 December 2023, BAE Systems reported revenues of £23.1 billion, resulting in an operating profit of £2.57 billion.²⁰³

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NUCLEAR WEAPONS

BAE Systems is involved in three nuclear weapon arsenals: those of France, the United Kingdom and the United States.

BAE Systems is part of the MBDA joint venture. MBDA France is the prime contractor for the ASMPA medium-range air-to-ground nuclear armed missile for the French nuclear arsenal.²⁰⁴ MBDA is also contracted by the French government for work related to development of the ASMPA-successor, the ASN4G.²⁰⁵ The new weapon is scheduled to enter service in 2035 with range exceeding 1,000km, double that of the ASMPA,²⁰⁶ and will incorporate new hypersonic technologies.²⁰⁷

BAE Systems has been the prime contractor for the U.S. Minuteman III intercontinental ballistic missile (ICBM) integration support.²⁰⁸ In June 2022, BAE

Systems received an 18-year, \$12 billion contract to continue supporting the sustainment of the US' ICBM inventory.²⁰⁹ The contract provides for services support for both the Minuteman III and its replacement, the Sentinel. In August 2024, however, after several bid protests to the Government Accountability Office (GAO), the Air Force cancelled the contract altogether.²¹⁰ A new contract is currently under development, where the Sentinel and Minuteman III programs will be merged under one directorate.²¹¹ In the meantime, BAE Systems will continue its work under the contract awarded in 2022. BAE Systems has a second outstanding contract for work on the ICBM systems since 2013, valued at \$1.8 billion.²¹²

BAE Systems is also contracted by the U.S. government for work on the U.S. and UK Trident II D5 strategic weapon systems. Until September 2024, it held two contracts for Trident-related services with a combined value of \$297 million.²¹³ It also has an outstanding contract for logistics engineering and integration support services for the Trident weapon systems, expected to run until January 2027, with a potential value of \$105 million.²¹⁴

BAE Systems is also part of the Dreadnought Alliance, a joint management team between the Submarine Delivery Agency (SDA) of the British Ministry of Defence, BAE Systems and Rolls-Royce.²¹⁵ BAE Systems is the lead for the whole boat build and secondary propulsion and is also the platform technical authority on the Dreadnought programme.²¹⁶ In May 2022, the Ministry of Defence announced it had awarded additional contracts for the Dreadnought programme of over £2 billion to BAE Systems and Rolls-Royce, as an initial investment within a planned overall total of £10 billion for the whole delivery phase.²¹⁷ BAE Systems also has an outstanding contract, valued at \$71.9 million, for work on U.S. Columbia-class nuclear armed submarines.²¹⁸

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 9: FINANCING AND INVESTMENT RELATIONSHIPS WITH BAE SYSTEMS

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Artisan Partners	United States				\$648
Bank of America	United States	\$4,063	\$218		
Bank of New York Mellon	United States				\$354
Barclays	United Kingdom		\$218		
BlackRock	United States				\$5,298
BNP Paribas	France		\$218		
Capital Group	United States				\$5,933
Citigroup	United States	\$4,063	\$218		
Commerzbank	Germany		\$218		
Crédit Agricole	France		\$218		
Crédit Mutuel	France		\$218		
Deutsche Bank	Germany		\$218		
Fidelity Investments	United States				\$2,533
First Abu Dhabi Bank	United Arab Emirates	\$811			
First Eagle Investments	United States				\$802
Geode Capital Holdings	United States				\$294
Goldman Sachs	United States		\$218		
Government Pension Investment Fund (GPIF)	Japan				\$303
Invesco	United States				\$2,360
JPMorgan Chase	United States		\$218		
Legal & General	United Kingdom				\$489
Lloyds Banking Group	United Kingdom		\$218		
M&G	United Kingdom				\$310
Mawer Investment Management	Canada				\$270
Mitsubishi UFJ Financial	Japan	\$2,295	\$218		
Morgan Stanley	United States		\$218		
National Australia Bank	Australia		\$218		
NatWest	United Kingdom		\$218		
Northern Trust	United States	\$811			
Orbis Group	Bermuda				\$555
Principal Financial Group	United States				\$311
Prudential Financial (US)	United States			\$131	
Royal Bank of Canada	Canada		\$218		
Santander	Spain		\$218		
Silchester International Investors	United Kingdom				\$1,429
Skandinaviska Enskilda Banken	Sweden		\$218		
SMBC Group	Japan		\$218		
Société Générale	France		\$218		
State Street	United States				\$459
Toronto-Dominion Bank	Canada		\$218		
Vanguard	United States				\$1,752
WCM Investment Management	United States				\$1,259

Wellington Management	United States				\$482
Wells Fargo	United States		\$218		
White Mountains Insurance	Bermuda			\$53	
GRAND TOTAL		\$12,041	\$4,800	\$184	\$25,842

4. Bechtel (United States)

COMPANY PROFILE

Bechtel Group, a private, family company based in the U.S., operates as an engineering, construction and project management company.²¹⁹ Bechtel manages and operates the Lawrence Livermore National Laboratory (together with University of California, BWX Technologies and Amentum), which, as its primary mission, supports the U.S. nuclear weapons capabilities,²²⁰ and is building the launch system for the Sentinel, the new U.S. intercontinental ballistic missile.²²¹ For the financial year 2023, Bechtel Group reported revenues of \$20.6 billion.²²²

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NUCLEAR WEAPONS

Bechtel is part of the Northrop Grumman-led team that is building the Sentinel, the new U.S. intercontinental ballistic missile.²²³ Bechtel is responsible for designing and building the launch systems.²²⁴

Bechtel is also a team member of the Lawrence Livermore National Security, LLC consortium, which has the management and operation contract for the Lawrence Livermore National Laboratory, the lead design agency for the life extension program for the W80-4 cruise missile warhead and the modification program for the W87-1 warhead.²²⁵ The contract was originally awarded in May 2007, and currently runs until at least September 2026, with a potential value of \$93.3 billion.²²⁶

Bechtel furthermore takes part in Consolidated Nuclear Security (CNS), LLC, which from 2013 to October 2024 managed the Pantex Plant and the Y-12 National Security Complex under a single \$49.8 billion contract,²²⁷ where it was “fully responsible for high-hazard enriched uranium, special nuclear material (SNM), high-explosive and nuclear weapon assembly/disassembly functions”.²²⁸ The National Nuclear Security Administration (NNSA) ended this contract deal in 2020 for failing to meet safety and security standards,²²⁹ but as it struggled to find a new manager, CNS remained responsible for both sites.²³⁰ In June 2024, the NNSA announced it had selected the BWXT-led PanTexas Deterrence to manage the Pantex Plant, which formally took over in November 2024.²³¹ CNS continues to hold the management and operations contract for the Y-12 Complex until at least September 2027.²³²

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 10: FINANCING RELATIONSHIPS WITH BECHTEL

INSTITUTION	COUNTRY	LOANS
ANZ	Australia	\$257
Bank of America	United States	\$775
BNP Paribas	France	\$775
CIBC	Canada	\$257
Citigroup	United States	\$750
Crédit Agricole	France	\$750
Crédit Mutuel	France	\$257
HSBC	United Kingdom	\$257
Intesa Sanpaolo	Italy	\$167
JPMorgan Chase	United States	\$424
Mitsubishi UFJ Financial	Japan	\$499
PNC Financial Services	United States	\$167
SMBC Group	Japan	\$499
Société Générale	France	\$167
GRAND TOTAL		\$6,000

5. Bharat Dynamics Limited (India)

COMPANY PROFILE

Bharat Dynamics Limited (BDL) is a Government of India Enterprise under the Ministry of Defence.²³³ It is also traded at the NSE India (National Stock Exchange of India) and Bombay Stock Exchange.²³⁴ BDL has produced missiles designed to deliver Indian nuclear warheads. In the financial year ending 31 March 2024, it generated revenues of ₹23.69 billion.²³⁵

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NUCLEAR WEAPONS

Bharat Dynamics Limited (BDL) was incorporated under the Indian Ministry of Defence as the manufacturing base for guided missile systems and allied equipment for the Indian Armed Forces.²³⁶ BDL has been identified as the prime production agency for the Indian Integrated Guided Missile Development Programme, and was involved in the Prithvi and Agni nuclear-capable missile programmes.²³⁷ BDL also provides product life cycle support and refurbishment, and support for life extension programmes.²³⁸ In March 2024, the Indian Government announced it conducted the first test flight of the Agni-V ballistic missile.²³⁹ India is also rumoured to be developing a new intercontinental ballistic missile, the Agni-VI.²⁴⁰

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 11: INVESTMENT RELATIONSHIPS WITH BHARAT DYNAMICS LIMITED

INSTITUTION	COUNTRY	SHAREHOLDING
Aditya Birla Capital	India	\$17
Axis Bank	India	\$33
BlackRock	United States	\$16
Canara Bank	India	\$49
Dimensional Fund Advisors	United States	\$16
HDFC Bank	India	\$257
HSBC	United Kingdom	\$29
ICICI Bank	India	\$54
Invesco	United States	\$29
Kotak Mahindra Bank	India	\$106
Life Insurance Corporation of India	India	\$128
Motilal Oswal	India	\$39
Nippon Life Insurance	Japan	\$31
Vanguard	United States	\$72
White Oak Capital Management	India	\$20
GRAND TOTAL		\$896

6. Boeing (United States)

COMPANY PROFILE

Boeing is a manufacturer of commercial and military aircraft, satellites and weapons, among others.²⁴¹ Boeing produces key components for the B61-12 gravity bombs,²⁴² and has outstanding contracts for work on the Minuteman III system and the U.S. Long Range Standoff missiles. In the financial year ending 31 December 2023, Boeing reported \$77.8 billion in revenues.²⁴³ For the fourth quarter of 2024, Boeing reported revenues of \$15.2 billion, a 31% drop compared to the same period in 2023.²⁴⁴

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NUCLEAR WEAPONS

Boeing remanufactured the warhead arming device for the Air-Launched Cruise Missiles of the U.S. nuclear arsenal.²⁴⁵ The Air Force Nuclear Weapons Center at Tinker Air Force Base, Oklahoma contracted Boeing in July 2024 for further engineering services support for the Air-Launched Cruise missile, including its integration with the B-52 Stratofortress strategic bomber.²⁴⁶ The contract has a potential value of \$70.6 million and work is expected to be complete by June 2033.²⁴⁷

Boeing also holds a \$250 million contract for the Long-Range Standoff (LRSO) weapon system.²⁴⁸ The contract includes aircraft and missile carriage equipment development and modification, engineering, testing, software development, training, facilities, and support necessary to fully integrate the LRSO Cruise Missile on the B-52H bomber platform.²⁴⁹

Boeing produces the guided tail-kit for the B61-12 upgrade, for which it has one outstanding contract, with a potential value of \$79.1 million, expected to be completed in September 2026.²⁵⁰

Since 1958, Boeing has been responsible for the development and production of the U.S. Minuteman ICBM system.²⁵¹ Boeing currently has several outstanding contracts to provide engineering and repair services for the Minuteman III guidance (sub)system, with a combined potential value of \$4.8 billion.²⁵² Under an eight-year contract, awarded in April 2022, potentially valued at \$72.2 million, Boeing will produce and deliver Flight Test Telemetry Termination (FT3) Systems to support the operational test launch schedule for the Minuteman III.²⁵³ Boeing has another outstanding contract to support Minuteman III testing, potentially valued at \$559 million.²⁵⁴ Boeing was also awarded a contract in December 2022, potentially valued at \$22.4 million, to support the Communications Equipment Interface Unit (CEIU) in the Minuteman III guidance system.²⁵⁵

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 12: FINANCING AND INVESTMENT RELATIONSHIPS WITH BOEING

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Academy Securities	United States		\$146		
ANZ	Australia	\$402			
Arab Banking Corporation (Bank ABC)	Bahrain	\$58			
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$443			
Bank of America	United States	\$1,387	\$711		\$1,417
Bank of China	China	\$342			
Bank of New York Mellon	United States	\$58			
Barclays	United Kingdom	\$769	\$146		

BayernLB	Germany	\$58			
BlackRock	United States				\$5,706
BNP Paribas	France	\$1,155	\$711		
Capital Group	United States				\$8,040
Charles Schwab	United States				\$573
Citigroup	United States	\$3,991	\$711		
Commerzbank	Germany	\$730	\$146		
Crédit Agricole	France	\$939	\$146		
DBS	Singapore	\$641			
Deutsche Bank	Germany	\$1,195	\$711		
Fidelity Investments	United States				\$4,352
First Abu Dhabi Bank	United Arab Emirates	\$309			
Fisher Investments	United States				\$835
Franklin Resources	United States			\$390	
Geode Capital Holdings	United States				\$2,075
Goldman Sachs	United States	\$839	\$711		
Government Pension Investment Fund (GPIF)	Japan				\$607
Groupe BPCE	France				\$2,699
ICICI Bank	India	\$161			
Industrial and Commercial Bank of China	China	\$191			
Intesa Sanpaolo	Italy	\$161			
JPMorgan Chase	United States	\$2,125	\$711		
Legal & General	United Kingdom				\$625
Lloyds Banking Group	United Kingdom	\$402	\$146		
Loop Capital	United States		\$146		
Mitsubishi UFJ Financial	Japan	\$898	\$146		
Mizuho Financial	Japan	\$1,195	\$711		
Morgan Stanley	United States	\$839	\$711		\$623
National Australia Bank	Australia		\$146		
Newport Group	United States				\$5,759
Northern Trust	United States	\$412			\$584
PJT Partners	United States		\$146		
Prudential Financial (US)	United States				\$1,110
Riyad Bank	Saudi Arabia	\$266			
Royal Bank of Canada	Canada	\$1,135	\$711		
Santander	Spain	\$771	\$146		
Shank Williams Cisneros & Co	United States		\$146		
SMBC Group	Japan	\$1,195	\$711		
Société Générale	France	\$733	\$146		
Standard Chartered	United Kingdom	\$478	\$146		
State Bank of India	India	\$402			
State Street	United States	\$174			\$4,940
Sun Life Financial	Canada				\$1,366

T. Rowe Price	United States				\$1,318
TIAA	United States				\$1,196
Truist Financial	United States	\$133			
UBS	Switzerland	\$441			
US Bancorp	United States	\$476	\$146		
Vanguard	United States			\$403	\$9,231
Wellington Management	United States				\$822
Wells Fargo	United States	\$1,387	\$711		
Westpac	Australia	\$716	\$146		
GRAND TOTAL		\$28,010	\$10,000	\$793	\$53,879

7. China Aerospace Science and Technology (CASC)

COMPANY PROFILE

China Aerospace Science and Technology Corporation (CASC) is part of China's state-owned (aero)space and defence industry.²⁵⁶ The company has eight large R&D and production complexes, 11 specialized companies, 13 listed companies and a number of directly affiliated units.²⁵⁷ It is engaged in space products and strategic and tactical missile systems. CASC states it is the only manufacturer of intercontinental strategic nuclear missiles in China. CASC generated \$9.6 billion in revenue in 2023.²⁵⁸

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NUCLEAR WEAPONS

China Aerospace Science and Technology Corporation (CASC) states that it is the only manufacturer of intercontinental strategic nuclear missiles in China and that the strategic nuclear missiles it has developed range "from single-stage to multi-stage, from liquid to solid, from land-based to land/sea-based, from fixed-launch to mobile launch, and from medium and long-range to intercontinental".²⁵⁹ CASC manufactures the dual-capable DF-26 intermediate-range ballistic missile.²⁶⁰ China continues to expand its DF-26 missile force.²⁶¹ The U.S. Pentagon also reports China may have already deployed a new long-range ballistic missile, the DF-27, which can carry either conventional or nuclear warheads.²⁶²

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 13: FINANCING AND INVESTMENT RELATIONSHIPS WITH CASC

INSTITUTION	COUNTRY	UNDERWRITING	SHAREHOLDING
China Chengtong	China		\$55
China Development Bank	China		\$139
China Merchants Bank	China	\$1,366	
China Southern Asset Management (CSAM)	China		\$24
CITIC	China	\$576	
CSC Financial	China	\$303	
Fullgoal Fund Management	China		\$28
Huashang Fund Management	China		\$17
Hubei Juyuan Technology Investment	China		\$49
Huihua Fund Management	China		\$114
New China Asset Management	China		\$80
Penghua Fund Management	China		\$32
GRAND TOTAL		\$2,245	\$539

8. Fluor (United States)

COMPANY PROFILE

Fluor, based in the United States, provides complex engineering, procurement, fabrication, construction, and maintenance projects for commercial and government clients.²⁶³ Fluor holds contracts with the U.S. Department of Defence, the U.S. Department of Energy and the National Nuclear Security Administration (NNSA) that includes management, the operation of nuclear facilities, environmental remediation, rapid response and emergency recovery solutions, and base engineering and construction.²⁶⁴ In the year ending December 2023, Fluor reported \$15.5 billion in revenue.²⁶⁵

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NUCLEAR WEAPONS

Fluor is the lead partner in Savannah River Nuclear Solutions (SRNS), a joint venture with Stoller Newport News Nuclear (SN3, part of Huntington Ingalls Industries).²⁶⁶ Since 2008, SRNS remains responsible for the management and operation of the Department of Energy's Savannah River Site and Savannah River National Laboratory, which produces tritium and is currently being expanded to also include plutonium pit production, both critical components for nuclear weapons.²⁶⁷ The contract, potentially valued at \$36.1 billion, was extended in September 2022 by five more years.²⁶⁸

TABLE 14: FINANCING AND INVESTMENT RELATIONSHIPS WITH FLUOR

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Absolute Investment Advisers	United States			\$12	
Allianz	Germany			\$141	
American National Insurance	United States			\$14	
Ameriprise Financial	United States			\$9	
Anchor Capita	United States				\$50
Auto-Owners Insurance	United States			\$15	

As a subcontractor of the joint venture Triad National Security²⁶⁹, Fluor "provides personnel, systems, tools and corporate reachback support for the critical area of capital construction" for the Los Alamos Laboratory.²⁷⁰ The Los Alamos National Laboratory is responsible for the nuclear design and engineering and life extension programmes for U.S. nuclear warheads.²⁷¹ The contract awarded to Triad National Security has a potential value of \$38.8 billion and is expected to run until at least October 2028.²⁷² In 2023, the NNSA also approved the start of the construction of infrastructure to allow for the production of plutonium pits,²⁷³ yet this has now been put on hold after the South Carolina District Court ruled the NNSA had violated the National Environmental Policy Act (NEPA) by failing to properly analyse alternatives.²⁷⁴

In June 2024, PanTexas Deterrence – a joint venture that is led by BWXT Technical Services Group and includes Fluor – received a contract award to manage and operate the Pantex Plant, the primary U.S. site for assembly of nuclear weapons.²⁷⁵ The award comes after a long search for a new manager after the NNSA ended its deal with Consolidated Nuclear Security (CNS) for failing to meet safety and security standards, amounting to "unacceptable risk" in 2020.²⁷⁶ The contract involves an initial term of five years and may span up to 20 years, with a potential value of \$30.1 billion.²⁷⁷

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

Bank of America	United States	\$538	\$209		\$64
Bank of New York Mellon	United States				\$91
BlackRock	United States			\$23	\$819
BMO Financial Group	Canada	\$125	\$24		
BNP Paribas	France	\$538	\$209		
Brown Advisory	United States				\$101
Calamos Investments	United States			\$32	
Cartenna Capital	United States				\$51
Charles Schwab	United States				\$71
Cincinnati Financial	United States			\$15	
Citadel	United States				\$50
Citigroup	United States	\$538	\$209		
Comerica	United States	\$275	\$24		
Dimensional Fund Advisors	United States				\$111
Equitable Holdings	United States				\$149
Fidelity Investments	United States			\$17	\$629
Fifth Third Bancorp	United States	\$125	\$24		
Franklin Resources	United States			\$50	
Geode Capital Holdings	United States				\$172
Goldman Sachs	United States	\$50	\$24		
Greenhouse Funds	United States				\$109
Hood River Capital Management	United States				\$48
Hotchkis & Wiley Capital Management	United States				\$176
Knights of Columbus	United States			\$10	
Lord, Abbett & Co	United States			\$23	
Luther King Capital Management	United States				\$46
Masters Capital Management	United States				\$43
Millennium Management	United States				\$167
Mitsubishi UFJ Financial	Japan	\$350	\$24		
Modern Woodmen of America	United States			\$10	
Morgan Stanley	United States				\$107
Northern Trust	United States				\$67
Point72	United States				\$54
Regions Financial	United States	\$125	\$24		
Royal Bank of Canada	Canada	\$50			
Rubric Capital Management	United States				\$140
SMBC Group	Japan	\$100	\$24		
Standard Bank	South Africa	\$50	\$24		
Standard Chartered	United Kingdom	\$100	\$24		
State Farm	United States			\$23	
State Street	United States			\$7	\$258
Thrivent Financial	United States			\$18	\$87
TIAA	United States				\$47
US Bancorp	United States	\$100	\$24		
Van Eck Associates Corporation	United States			\$31	

Vanguard	United States				\$754
Victory Capital	United States			\$8	\$47
Wellesley Asset Management	United States			\$10	
Wellington Management	United States				\$646
Wells Fargo	United States	\$538	\$209		
GRAND TOTAL		\$3,600	\$1,075	\$468	\$5,153

9. General Dynamics (United States)

COMPANY PROFILE

General Dynamics is an aerospace and defence company.²⁷⁸ It produces business jets, combat vehicles, ordnance, command and control systems, and nuclear submarines.²⁷⁹ General Dynamics is involved in the production of components for the U.S. and UK Trident II (D5) nuclear armed submarine-launched ballistic missiles and is building new nuclear armed Columbia Class submarines for the U.S. Navy. General Dynamics also works on command and launch capabilities for the Sentinel, the new U.S. intercontinental ballistic missile program. In the financial year ending 31 December 2024, General Dynamics reported revenues of \$ 47.7 billion.²⁸⁰

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NUCLEAR WEAPONS

General Dynamics is responsible for the sustainment of the Weapons Control Systems (WCS) and guidance systems as it supports the life extension of Trident nuclear missiles.²⁸¹ In October 2022, General Dynamics was awarded a contract to provide U.S. Trident II Strategic Weapon System Kings Bay Trident Trainer Facility kit and engineering support services, with a potential value of \$33.1 million.²⁸² While General Dynamics receives contracts through the U.S. contract system, sometimes this is for work only on UK

weapon systems. An example of this is the six-year contract, awarded in 2019 and potentially valued at \$69.1 million, for the Strategic Weapon System Fire Control Subsystem hardware, associated deliverables, and spares for the second hull of the UK Dreadnought Class ballistic missile submarines.²⁸³

In December 2024, General Dynamics Mission Systems completed a contract for U.S. and UK Trident II (D-5) Fleet Ballistic Missile Submarines Fire Control System and other support.²⁸⁴ It has three other outstanding contracts for work on the Trident II systems, with a combined potential value of \$1.1 billion.²⁸⁵

General Dynamics is also building the new nuclear-armed submarines (Columbia class) for the U.S. Navy, under a 14-year contract through 2031, potentially valued at \$22.8 billion.²⁸⁶

General Dynamics is part of the Northrop Grumman-led team working to design the LGM-35A Sentinel, the new U.S. intercontinental ballistic missile program, working on command and launch capabilities.²⁸⁷

The U.S. Air Force Nuclear Weapon Center has also contracted General Dynamics to support base-band cryptographic equipment for Presidential and National Voice Conferencing (PNVC), and for the design, development and test of the Higher Authority Communication Test System (HACTS) test stations for the Minuteman III, under contracts with a combined potential value of \$31 million²⁸⁸

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 15: FINANCING AND INVESTMENT RELATIONSHIPS WITH GENERAL DYNAMICS

INSTITUTION	COUNTRY	LOANS	BONDHOLDING	SHAREHOLDING
Ameriprise Financial	United States			\$601
ANZ	Australia	\$211		
Aristotle Capital Management	United States			\$859
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$211		
Bank of America	United States	\$963		\$2,207

Bank of New York Mellon	United States	\$54		
BlackRock	United States			\$3,355
Capital Group	United States			\$1,819
Capital One Financial	United States	\$54		
Charles Schwab	United States			\$413
Citigroup	United States	\$54		
Crédit Mutuel	France	\$54		
Dimensional Fund Advisors	United States			\$431
Fidelity Investments	United States			\$1,325
Fifth Third Bancorp	United States	\$54		
First Abu Dhabi Bank	United Arab Emirates	\$211		
Franklin Resources	United States			\$512
Fuyo General Lease	Japan	\$54		
Geode Capital Holdings	United States			\$1,427
Goldman Sachs	United States	\$54		
Government Pension Fund Global (GPF)	Norway			\$712
JPMorgan Chase	United States	\$477		\$1,298
Legal & General	United Kingdom			\$429
Lloyds Banking Group	United Kingdom	\$265		
Mitsubishi UFJ Financial	Japan	\$447		
Mizuho Financial	Japan	\$477		
Newport Group	United States			\$4,486
Northern Trust	United States	\$211		
Orix Corporation	Japan			\$426
PNC Financial Services	United States	\$265		
Prudential Financial (US)	United States		\$62	
Raven's Wing Asset Management	United States			\$8,152
Regions Financial	United States	\$54		
Royal Bank of Canada	Canada	\$394		\$627
Sanders Capital	United States			\$1,198
Scotiabank	Canada	\$337		
SMBC Group	Japan	\$265		
State Street	United States			\$2,902
Sun Life Financial	Canada			\$2,171
T. Rowe Price	United States			\$1,209
Toronto-Dominion Bank	Canada	\$211		
Truist Financial	United States	\$54		
US Bancorp	United States	\$265		
Vanguard	United States			\$6,397
Wellington Management	United States			\$4,090
Wells Fargo	United States	\$824		\$1,799
GRAND TOTAL		\$6,516	\$62	\$48,843

10. Honeywell International (United States)

COMPANY PROFILE

Honeywell International is involved in aerospace, commercial real estate, energy transition, and industrial automation.²⁸⁹ The company contributes to the U.S. ICBM programme and is also involved in management and operations of several U.S. nuclear weapon production facilities. In the financial year ending 31 December 2023, Honeywell International announced sales of \$36.7 billion.²⁹⁰

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NUCLEAR WEAPONS

Honeywell works on guidance and control instruments and booster control for the LGM-35A Sentinel, the new U.S. intercontinental ballistic missile (ICBM), formerly known as the Ground Based Strategic Deterrent.²⁹¹

Honeywell is the original equipment manufacturer of the Pendulous Integrating Gyroscopic Accelerometer guidance instrument for the Minuteman III.²⁹² In March 2022, Honeywell was awarded a six-year \$103 million contract for its repair.²⁹³

Honeywell states it has been supporting U.S. national security goals “since the dawn of the nuclear age”.²⁹⁴ Today, Honeywell operates three sites for the U.S. Department of Energy and the National Nuclear Security Administration through joint-venture partnerships: Kansas City National Security Campus, Nevada National Security Site, and Sandia National Laboratory.²⁹⁵

Since 2015, Honeywell Federal Solutions has been managing and operating the National Security

Campus (NSC) (formerly Kansas City Plant), the facility responsible for producing an estimated 80%²⁹⁶ of the non-nuclear components for U.S. nuclear weapons, including electronic, chemical and engineered material components.²⁹⁷ This includes production of the gas transfer system and the arming, fuzing, and firing subsystem of the W88 Alt 370 warhead for the Trident II submarine-launched ballistic missiles²⁹⁸, and firing, safing and use components of the new W80-4 warhead for the Long Range Standoff (LRSO) missiles²⁹⁹ and the new B61-12 nuclear gravity bomb³⁰⁰. The 10-year contract has a potential total value of \$17.7 billion.³⁰¹

Sandia National Laboratory is directly involved in the nuclear weapon modernisation programmes of the W88 Alt 37 warhead³⁰² and the new W39/Mk7 program³⁰³ (both used for arming the submarine-launched Trident II missiles), the W87-1 warhead for the new U.S. intercontinental ballistic missile, the Sentinel,³⁰⁴ the W80-4 warheads for the Long Range Standoff missiles,³⁰⁵ and the new B61-12 gravity bomb^{306,307}. Sandia National Laboratory was also one of the design agencies for the refurbishment of the W76-1 warhead for the Trident II submarine-launched ballistic missiles.³⁰⁸ National Technology and Engineering Solutions of Sandia (NTES), a “wholly-owned subsidiary” of Honeywell, has the management and operations contract. The contract, with a potential total value of \$46.2 billion, runs until April 2027.³⁰⁹ Peraton and Universities Research Association³¹⁰ support NTES in the performance of this contract.³¹¹

Together with Jacobs Engineering Group Inc., and Huntington Ingalls Industries subsidiary HII Nuclear Inc., Honeywell is also part of the Mission Support and Test Service (MSTS) consortium that manages and operates the U.S. Nevada National Security Site.³¹² The site is used for tests that “provide data relevant to improving our predictive capability, assessing the current stockpile and certifying the future stockpile”³¹³. MSTS is also contracted for producing nuclear weapon “components (particularly pit production)” as well as “strategic materials capabilities”.³¹⁴ The consortium was awarded a 10 year contract in 2017, potentially valued at \$10.4 billion.³¹⁵

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 16: FINANCING AND INVESTMENT RELATIONSHIPS WITH HONEYWELL INTERNATIONAL

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Academy Securities	United States		\$185		
Ameriprise Financial	United States				\$1,756
ANZ	Australia	\$350			
Aristotle Capital Management	United States				\$994
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$843	\$220		
Bank of America	United States	\$1,367	\$1,006		\$2,870
Bank of China	China	\$350			
Barclays	United Kingdom	\$696	\$103		
BayernLB	Germany	\$56			
BlackRock	United States				\$7,126
BNP Paribas	France	\$843	\$523		
Capital Group	United States				\$1,291
Charles Schwab	United States				\$799
CIBC	Canada	\$350			
Citigroup	United States	\$1,188	\$780		
Crédit Agricole	France	\$559	\$103		
Danske Bank	Denmark	\$350			
DBS	Singapore	\$619			
Deutsche Bank	Germany	\$1,140	\$1,119		
Franklin Resources	United States				\$1,742
Geode Capital Holdings	United States				\$2,950
Goldman Sachs	United States	\$1,140	\$1,010		\$677
Government Pension Investment Fund (GPIF)	Japan				\$819
HSBC	United Kingdom	\$619	\$103		
Industrial and Commercial Bank of China	China	\$619	\$103		
Intesa Sanpaolo	Italy	\$56			
Invesco	United States				\$3,370
Janus Henderson	United Kingdom				\$793
JPMorgan Chase	United States	\$1,415	\$1,117		\$2,512
Legal & General	United Kingdom				\$1,049
Mitsubishi UFJ Financial	Japan	\$835			
Mizuho Financial	Japan	\$1,063	\$775		
Morgan Stanley	United States	\$305	\$1,000		\$3,333
NatWest	United Kingdom	\$619	\$103		
Newport Group	United States				\$3,348
Northern Trust	United States	\$619			\$855
Olayan Financing Company	Saudi Arabia				\$683

Royal Bank of Canada	Canada	\$619	\$103		\$690
Santander	Spain	\$843	\$220		
Scotiabank	Canada	\$559	\$103		
SMBC Group	Japan	\$1,063	\$780		
Société Générale	France	\$843	\$220		
Standard Chartered	United Kingdom	\$619	\$103		
State Farm	United States			\$165	
State Street	United States				\$6,606
Sun Life Financial	Canada				\$2,639
T. Rowe Price	United States				\$2,030
TIAA	United States				\$1,434
Toronto-Dominion Bank	Canada	\$843	\$220		
UBS	Switzerland				\$809
UniCredit	Italy	\$843	\$662		
US Bancorp	United States	\$843	\$220		
Vanguard	United States				\$12,947
Wellington Management	United States				\$3,513
Wells Fargo	United States	\$1,367	\$894		
Westpac	Australia	\$56			
GRAND TOTAL		\$24,500	\$11,771	\$165	\$67,635

11. Huntington Ingalls Industries (HII) (United States)

COMPANY PROFILE

Huntington Ingalls Industries (HII) is a global engineering and defence technology provider.³¹⁶ It designs, constructs and maintains nuclear and non-nuclear ships for the U.S. Navy and Coast Guard, and provides other nuclear and environmental services.³¹⁷ The company is involved in the management and operation of several facilities responsible for the production, development and stockpiling of U.S. nuclear weapons. In the financial year ending 31 December 2023, HII generated revenues of \$ 11.5 billion.³¹⁸

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NUCLEAR WEAPONS

The Los Alamos National Laboratory is responsible for the nuclear design and engineering and life extension programmes for U.S. nuclear warheads.³¹⁹ As a subcontractor of the joint venture Triad National Security³²⁰, Huntington Ingalls Industries provides “personnel, systems, tools and corporate reachback in the areas of pit production, plutonium manufacturing, production scale-up and nuclear operations and manufacturing” for the Los Alamos Laboratory.³²¹ The contract has a potential value of \$38.8 billion and

is expected to run until at least October 2028.³²² In 2023, the NNSA also approved the start of the construction of infrastructure to allow for the production of plutonium pits,³²³ yet this has now been put on hold after the South Carolina District Court ruled the NNSA had violated the National Environmental Policy Act (NEPA) by failing to properly analyse alternatives.³²⁴

Formerly known as the Nevada Test Site, the Nevada National Security Site maintains facilities related to nuclear weapon modernisation and stockpiling. It retains the capability to resume full-scale nuclear testing within a couple years, at the discretion of the U.S. President.³²⁵ Mission Support and Test Services LLC (MSTS) manages and operates the site.³²⁶ MSTS is a limited liability company consisting of Honeywell International Inc., Jacobs Solutions Inc., and Stoller Newport News Nuclear, Inc. (SN3), a subsidiary of HII.³²⁷ The ten-year contract is potentially valued at \$10.4 billion and is set to expire in November 2027.³²⁸

Through SN3, HII is also involved in the joint venture managing and operating the Savannah River Site and Savannah River National Laboratory³²⁹, which produces tritium and is currently being expanded to also include plutonium pit production, both critical components for nuclear weapons.³³⁰ In September 2022, this contract, which has a potential value of \$36.1 billion, was extended for another five years.³³¹

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 17: FINANCING AND INVESTMENT RELATIONSHIPS WITH HUNTINGTON INGALLS INDUSTRIES

INSTITUTION	COUNTRY	LOANS	BONDHOLDING	SHAREHOLDING
Allianz	Germany		\$142	
American Century Investments	United States			\$117
AQR Capital Management	United States			\$180
Aristotle Pacific Capital	United States		\$20	
Baird	United States		\$48	
Bank of America	United States	\$407		\$97
Bank of New York Mellon	United States			\$79

BlackRock	United States		\$17	\$737
California Public Employees' Retirement System (CalPERS)	United States		\$33	
Capital One Financial	United States	\$174		
Charles Schwab	United States			\$93
Comerica	United States	\$174		
Dimensional Fund Advisors	United States			\$124
Fidelity Investments	United States			\$821
Fifth Third Bancorp	United States	\$174		
First Horizon	United States	\$246		
First Trust Advisors	United States			\$67
Geode Capital Holdings	United States			\$250
Hancock Whitney	United States	\$246		
HSBC	United Kingdom			\$66
Invesco	United States			\$416
JPMorgan Chase	United States	\$407		
KKR Group	United States	\$249		
Legal & General	United Kingdom			\$59
Lord, Abbett & Co	United States		\$44	
LSV Asset Management	United States			\$146
Manulife Financial	Canada		\$111	
MetLife	United States		\$18	
Mitsubishi UFJ Financial	Japan	\$323		
Mizuho Financial	Japan	\$407		
Morgan Stanley	United States			\$182
Nationwide Mutual Insurance	United States		\$112	
New York Life Insurance	United States		\$12	
Northern Trust	United States			\$58
Perpetual	Australia			\$110
PNC Financial Services	United States	\$174		
Scotiabank	Canada	\$407		
SEI	United States			\$89
Sound Shore Management	United States			\$85
State Street	United States		\$12	\$743
T. Rowe Price	United States			\$208
TIAA	United States		\$52	
Toronto-Dominion Bank	Canada	\$174		\$76
Truist Financial	United States	\$174		
UBS	Switzerland	\$360		
US Bancorp	United States	\$407		
Van Eck Associates Corporation	United States			\$225
Vanguard	United States		\$107	\$1,232
Veritas Capital Fund Management	United States	\$111		
Wealth Enhancement	United States			\$57
Wells Fargo	United States	\$407		
Westchester	United States			\$157
GRAND TOTAL		\$5,019	\$727	\$6,476

12. Jacobs Solutions (United States)

COMPANY PROFILE

Jacobs Solutions, previously known as Jacobs Engineering³³², is a U.S. based company that provides consulting, technical, scientific and project delivery services for the government and private sector.³³³ In September 2024, Jacobs completed the spin-off of its Critical Mission Solutions and Cyber & Intelligence government services businesses, now merged with Amentum.³³⁴ The spin-off also includes the business segment connected to the management and operation of the Nevada National Security Site.³³⁵ However, as the findings of this report are based on financial data retrieved before September 2024, Jacobs' previous involvement in the Nevada National Security Site is still relevant for the purposes of this report, and therefore outlined below.³³⁶ In the financial year ending 29 September 2023, Jacobs generated revenues of \$16.4 billion.³³⁷

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NUCLEAR WEAPONS

Formerly known as the Nevada Test Site, the Nevada National Security Site maintains facilities related to nuclear weapon modernisation and stockpiling. It retains the capability to resume full-scale nuclear testing within a couple years, at the discretion of the U.S. President.³³⁸ Mission Support and Test Services LLC (MSTS) manages and operates the site.³³⁹ MSTS is a limited liability company consisting of Honeywell International Inc., Jacobs Solutions Inc., and Stoller Newport News Nuclear, Inc. (SN3), a subsidiary of HII.³⁴⁰ The ten-year contract is potentially valued at \$10.4 billion and is set to expire in November 2027.³⁴¹

In January 2024, Jacobs was awarded a £108 million, 10-year contract to supply research and technology services to the United Kingdom's naval nuclear propulsion program, including for the Vanguard nuclear armed submarine.³⁴²

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 18: FINANCING AND INVESTMENT RELATIONSHIPS WITH JACOBS SOLUTIONS

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Academy Securities	United States		\$3		
Allianz	Germany			\$15	
Allspring Global Investments	United States			\$10	\$406
Baird	United States			\$52	
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$134			
Bank of America	United States	\$880	\$227		\$105
Bank of China	China	\$132			
Barclays	United Kingdom	\$191	\$20		
BlackRock	United States				\$849
BMO Financial Group	Canada	\$178			
BNP Paribas	France	\$1,164	\$160		
California Public Employees' Retirement System (CalPERS)	United States			\$10	

Capital Group	United States				\$578
Charles Schwab	United States				\$104
CI Financial	Canada				\$151
Citizens Financial Group	United States	\$266	\$20		
Comerica	United States	\$132	\$3		
Dimensional Fund Advisors	United States				\$169
Equitable Holdings	United States			\$10	
Fidelity International	Bermuda				\$102
Focus Financial Partners	United States				\$141
Geode Capital Holdings	United States				\$429
Government Pension Investment Fund (GPIF)	Japan				\$105
Groupe BPCE	France			\$23	
HSBC	United Kingdom	\$369	\$54		
Huntington Bancshares	United States	\$132	\$3		
Industrial and Commercial Bank of China	China	\$310	\$3		
Invesco	United States				\$280
Jackson Financial	United States			\$15	
JPMorgan Chase	United States	\$235	\$110		
Legal & General	United Kingdom				\$113
Lord, Abnett & Co	United States			\$109	
Macquarie Group	Australia				\$288
Minnesota Mutual Companies	United States			\$10	
Mirae Asset Financial Group	South Korea				\$115
Mitsubishi UFJ Financial	Japan	\$194			
Morgan Stanley	United States	\$369	\$75		\$96
NatWest	United Kingdom	\$235	\$20		
Neuberger Berman	United States				\$162
New York Life Insurance	United States			\$15	
Ninety One	South Africa				\$220
Northern Trust	United States	\$191			\$97
Orix Corporation	Japan				\$548
Perpetual	Australia				\$465
PNC Financial Services	United States	\$437			
Primecap Management	United States				\$780
Prudential Financial (US)	United States			\$24	
Regions Financial	United States	\$132	\$3		
Royal Bank of Canada	Canada	\$132	\$20		
Ruane, Cunniff & Goldfarb	United States				\$360
Scotiabank	Canada	\$369	\$54		
Smith Capital Investors	United States			\$9	
Southern Farm Bureau Life Insurance	United States			\$11	
State Street	United States				\$1,023
Sun Life Financial	Canada				\$235
Third Point	United States				\$244

Toronto-Dominion Bank	Canada	\$517	\$100		
Truist Financial	United States	\$235	\$3		
US Bancorp	United States	\$369	\$27		
Vanguard	United States			\$35	\$1,940
Wells Fargo	United States	\$1,164	\$202		
GRAND TOTAL		\$8,470	\$1,100	\$347	\$10,104

13. L3Harris Technologies (United States)

COMPANY PROFILE

L3Harris Technologies was established in 2019 through the merger of Harris Corporation and L3 Technologies.³⁴³ The company describes itself as a global aerospace and defence technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs.³⁴⁴ L3Harris Technologies provides flight test instrumentation support and services for the Trident II (D5) system. In July 2023, L3Harris completed its acquisition of Aerojet Rocketdyne, one of the members of Northrop Grumman's nation-wide team that is building the new U.S. ICBM. In the financial year ending December 29, 2023, L3Harris generated revenues of \$19.4 billion.³⁴⁵

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NUCLEAR WEAPONS

L3Harris subsidiary Interstate Electronics Corporation was awarded a new five-year contract in 2021 for flight test instrumentation support and services related to the Trident II (D5) nuclear missile.³⁴⁶ The potential value of the contract is \$405.1 million.³⁴⁷

L3Harris' subsidiary Aerojet Rocketdyne builds solid boost propulsion systems and has powered every U.S. intercontinental ballistic missile (ICBM) ever fielded, including Trident II D5 missiles and the Minuteman III.³⁴⁸ Aerojet Rocketdyne is also part of the team put together by Northrop Grumman to build the Sentinel, the new U.S. intercontinental ballistic missile, for which it is developing a large solid rocket motor and the post-boost propulsion system.³⁴⁹

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 19: FINANCING AND INVESTMENT RELATIONSHIPS WITH L3HARRIS TECHNOLOGIES

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Allspring Global Investments	United States				\$452
Ameriprise Financial	United States				\$392
Bank of America	United States	\$1,414	\$796		\$258
Bank of New York Mellon	United States				\$242
Barclays	United Kingdom	\$257			
BlackRock	United States				\$3,629
BMO Financial Group	Canada	\$44			
California Public Employees' Retirement System (CalPERS)	United States				\$30
Capital Group	United States				\$2,865
Cathay General Bancorp	United States	\$97			
Charles Schwab	United States				\$289
Citigroup	United States	\$446	\$150		
Deutsche Bank	Germany	\$208			
Diamond Hill Investment Group	United States				\$334
Dimensional Fund Advisors	United States				\$316

Envestnet	United States				\$222
Fidelity Investments	United States				\$392
Fifth Third Bancorp	United States	\$97			
First Abu Dhabi Bank	United Arab Emirates	\$175			
First Citizens Bank	United States	\$19			
Franklin Resources	United States				\$493
Geode Capital Holdings	United States				\$1,050
Goldman Sachs	United States				\$231
Government Pension Fund Global (GPF)	Norway				\$315
HSBC	United Kingdom	\$257			
Invesco	United States				\$292
Janus Henderson	United Kingdom				\$445
JPMorgan Chase	United States	\$1,270	\$796	\$66	
Legal & General	United Kingdom				\$265
Mitsubishi UFJ Financial	Japan	\$222			
Mizuho Financial	Japan	\$1,134	\$796		
Morgan Stanley	United States	\$379			\$686
National Pension Service	South Korea				\$258
Northern Trust	United States	\$257			\$238
Royal Bank of Canada	Canada	\$83			
Scotiabank	Canada	\$895	\$556		
SMBC Group	Japan	\$1,217	\$796		
State Street	United States				\$1,954
Sun Life Financial	Canada				\$315
T. Rowe Price	United States				\$2,092
TIAA	United States			\$78	
Toronto-Dominion Bank	Canada	\$1,134	\$796		
Truist Financial	United States	\$97			
US Bancorp	United States	\$905	\$406		
Vanguard	United States			\$72	\$5,098
Wellington Management	United States				\$1,103
Wells Fargo	United States	\$880	\$406		\$1,178
Zions Bancorporation	United States	\$19			
GRAND TOTAL		\$11,505	\$5,500	\$216	\$25,436

14. Leidos (United States)

COMPANY PROFILE

Leidos is a U.S.-based company active in defence, intelligence, civil, and health markets.³⁵⁰ Its defence sector activities include “enterprise and mission IT, large-scale intelligence systems, command and control, geospatial and data analytics, cybersecurity, logistics, training, and intelligence analysis and operations support”.³⁵¹ Leidos is part of the joint venture that manages and operates the Y-12 National Security Complex and, until October 2024, the Pantex Plant, where U.S. nuclear weapons are assembled. In the financial year ending 29 December 2023, Leidos generated revenues of \$15.4 billion.³⁵²

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NUCLEAR WEAPONS

Leidos is part of the Consolidated Nuclear Security (CNS), LLC joint venture that manages and operates the Y-12 National Security Complex and, until October 2024, the Pantex Plant³⁵³, where U.S. nuclear weapons are assembled.³⁵⁴ The Y-12 Complex is responsible for the remanufacture of components for the B61-12 nuclear gravity bomb, and the Pantex Plant for producing high explosives, requalifying the B61 pit, and final assembly of the complete B61-12 bomb for delivery to the U.S. Air Force.³⁵⁵ The Y-12 Complex and Pantex Plant also play a key role in the W88 nuclear warhead alteration (deployed on the Trident II D5 missile)³⁵⁶, the W80 life extension program (for use in the U.S. Long Range Standoff Weapon)³⁵⁷ and the W87 warhead modification (to be fielded on the new U.S. ICBM)³⁵⁸, through the production of weapon and uranium components, and detonators, and high explosives respectively. The contract held by CNS is potentially valued at \$49.8 billion.³⁵⁹

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 20: FINANCING AND INVESTMENT RELATIONSHIPS WITH LEIDOS

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Allianz	Germany			\$64	
Aristotle Pacific Capital	United States			\$26	
Baird	United States			\$143	
Bank of America	United States	\$580	\$108		
BlackRock	United States				\$1,734
BMO Financial Group	Canada	\$333	\$23		
California Public Employees' Retirement System (CalPERS)	United States			\$27	
Capital One Financial	United States	\$266	\$53		
Charles Schwab	United States				\$174
Citadel	United States				\$160
Citigroup	United States	\$266	\$108		
Deutsche Bank	Germany				\$149
Dimensional Fund Advisors	United States				\$249
Fidelity Investments	United States				\$197
Fifth Third Bancorp	United States	\$187	\$23		

First Trust Advisors	United States				\$254
FNB Corporation	United States	\$80			
Franklin Resources	United States			\$20	
Geode Capital Holdings	United States				\$485
Goldman Sachs	United States	\$187	\$23		
Government Pension Fund Global (GPF)	Norway				\$198
Groupe BPCE	France			\$28	
Guggenheim Partners	United States			\$20	
Invesco	United States				\$220
JPMorgan Chase	United States	\$266	\$53		\$370
Legal & General	United Kingdom				\$135
M&F Bancorp	United States	\$80			
Macquarie Group	Australia			\$19	
Mariner Wealth Advisors	United States				\$105
MassMutual Holdings	United States			\$55	
Millennium Management	United States				\$165
Mitsubishi UFJ Financial	Japan	\$266	\$108		
Mizuho Financial	Japan	\$273			
Northern Trust	United States				\$122
Orix Corporation	Japan				\$582
PNC Financial Services	United States	\$453	\$53		
Power Corporation of Canada	Canada				\$114
Prudential Financial (US)	United States			\$73	
Regions Financial	United States	\$187	\$23		
Royal Bank of Canada	Canada	\$107			
Scotiabank	Canada	\$393	\$53		
SMBC Group	Japan	\$227	\$53		
State Bank of India	India	\$120			
State Street	United States				\$838
Sun Life Financial	Canada				\$304
The Hartford	United States			\$44	
Toronto-Dominion Bank	Canada	\$187	\$23		
Unity National Bank	United States	\$80			
US Bancorp	United States	\$266	\$53		
Vanguard	United States			\$77	\$2,218
Victory Capital	United States				\$470
Wellington Management	United States				\$172
Wells Fargo	United States	\$253			
GRAND TOTAL		\$5,055	\$750	\$596	\$9,414

15. Leonardo (Italy)

COMPANY PROFILE

Leonardo, based in Italy, develops products and services in the fields of aerospace, defence and security.³⁶⁰ Leonardo has a 25% stake in the MBDA joint venture, which produces missiles for the French nuclear arsenal.³⁶¹ Leonardo also provides electric propulsion components for the U.S. Columbia Class nuclear armed submarines. In the financial year ending 31 December 2023, Leonardo generated revenues of €15.3 billion.³⁶²

Contact

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NUCLEAR WEAPONS

MBDA, in which Leonardo has a 25% stake, is the prime contractor for ASMPA nuclear missiles for the French arsenal.³⁶³ MBDA is also involved in developing the new ASN4G replacement for the ASMPA.³⁶⁴ The new weapon is scheduled to enter service in 2035 with range exceeding 1,000km, double that of the ASMPA,³⁶⁵ and will incorporate new hypersonic technologies.³⁶⁶

Leonardo also provides the integrated electric propulsion components for the U.S. Navy's Columbia-class submarine, for which it was awarded contracts valued at over \$1 billion and \$3 billion in April 2023 and January 2024 respectively.³⁶⁷

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 21: FINANCING AND INVESTMENT RELATIONSHIPS WITH LEONARDO

INSTITUTION	COUNTRY	LOANS	BONDHOLDING	SHAREHOLDING
Banca Monte dei Paschi di Siena	Italy	\$88		
Banca Passadore & C,	Italy	\$88		
Banca Popolare di Sondrio	Italy	\$108		
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$88		
Banco BPM	Italy	\$300		
Banco Mediolanum	Italy		\$6	
Bank of America	United States	\$211		
Bank of China	China	\$88		
Barclays	United Kingdom	\$118		
BlackRock	United States			\$168
BNP Paribas	France	\$362		
BPER Banca	Italy	\$229		
Capital Group	United States			\$623
Citigroup	United States	\$184		
Commerzbank	Germany	\$141		
Crédit Agricole	France	\$409		
Crédit Mutuel	France	\$88		
Deutsche Bank	Germany	\$88		

Dimensional Fund Advisors	United States			\$197
European Investment Bank	Luxembourg	\$262		
Fidelity Investments	United States			\$97
Fifth Third Bancorp	United States	\$38		
Goldman Sachs	United States	\$30		
Government Pension Fund Global (GPF)	Norway			\$91
Groupe BPCE	France	\$116	\$35	
HSBC	United Kingdom	\$88		
Intesa Sanpaolo	Italy	\$386		
Invesco	United States			\$158
JPMorgan Chase	United States	\$152		
Mediobanca Banca di Credito Finanziario	Italy	\$88		
Mitsubishi UFJ Financial	Japan	\$205		
Morgan Stanley	United States	\$30		
NatWest	United Kingdom	\$88		
PNC Financial Services	United States	\$38		
Regions Financial	United States	\$38		
Santander	Spain	\$88		
SMBC Group	Japan	\$212	\$7	
Société Générale	France	\$187		
T. Rowe Price	United States			\$113
UBS	Switzerland	\$30		
UniCredit	Italy	\$413		
US Bancorp	United States	\$40		
Vanguard	United States			\$286
Wells Fargo	United States	\$38		
GRAND TOTAL		\$5,148	\$49	\$1,733

16. Lockheed Martin (United States)

COMPANY PROFILE

Lockheed Martin is a U.S.-based global security and aerospace company that focuses on “research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services”.³⁶⁸ It is the world’s largest arms producer.³⁶⁹ Lockheed Martin has been the principal designer, manufacturer and sustainer of Minuteman III re-entry systems and also carries out work for the new U.S. ICBM, the Sentinel. It also has several outstanding contracts for Trident missile production. In the financial year ending 31 December 2023, Lockheed Martin reported net sales of over \$67 billion.³⁷⁰

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NUCLEAR WEAPONS

Lockheed Martin is producing command and control systems and, as part of the Northrop Grumman team, is responsible for missile payload integration for the Sentinel, the new U.S. intercontinental ballistic missile.³⁷¹ In October 2023, Lockheed Martin was also

awarded a \$1.1 billion contract to develop a re-entry vehicle for the Sentinel.³⁷²

Lockheed Martin has been the principal designer, manufacturer and sustainer of Minuteman III re-entry systems since the 1960s.³⁷³ The company currently has an outstanding contract for this work that runs until June 2029, valued at \$879 million.³⁷⁴

The U.S. Navy is planning to use the Lockheed Martin C-130J-30 Hercules aircraft for nuclear command and communications, specifically in a Take Charge And Move Out (TACAMO) role.³⁷⁵ In April 2023, it awarded Lockheed Martin a \$70.5 million contract modification to study the aircraft’s readiness for the TACAMO program.³⁷⁶

Lockheed Martin is responsible for the construction of the Trident II (D5) nuclear missiles for both the UK and the U.S.³⁷⁷ It has several outstanding contracts related to Trident production, together valued at more than \$7.5 billion, some of which are planned to continue through at least 2028.³⁷⁸

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 22: FINANCING AND INVESTMENT RELATIONSHIPS WITH LOCKHEED MARTIN

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Academy Securities	United States		\$19		
Ameriprise Financial	United States				\$880
Amerivet Securities Inc	United States		\$7		
ANZ	Australia	\$220			
Bancroft Capital (PA)	United States		\$4		
Bank of America	United States	\$1,119	\$848		\$1,151
Bank of New York Mellon	United States	\$350	\$172		
Barclays	United Kingdom	\$420	\$578		
BlackRock	United States				\$5,922
Blaylock Beal Van	United States		\$11		

Cabrera Capital	United States		\$4		
Capital Group	United States				\$1,820
CastleOak Securities	United States		\$19		
Charles Schwab	United States				\$3,179
Citigroup	United States	\$1,119	\$904		
Crédit Agricole	France	\$963	\$824		
Crédit Mutuel	France	\$50			
Drexel Hamilton	United States		\$8		
Fidelity Investments	United States				\$1,160
Fifth Third Bancorp	United States	\$220	\$93		
Franklin Resources	United States				\$1,041
Geode Capital Holdings	United States				\$2,216
Goldman Sachs	United States	\$420	\$979		
Government Pension Investment Fund (GPIF)	Japan				\$679
Great Pacific Securities	United States		\$4		
Invesco	United States				\$678
JPMorgan Chase	United States	\$1,119	\$994		
Lloyds Banking Group	United Kingdom	\$275	\$152		
MFR	United States		\$15		
Mischler Financial Group	United States		\$15		
Mitsubishi UFJ Financial	Japan	\$275			
Mizuho Financial	Japan	\$1,119	\$824		
Morgan Stanley	United States	\$275	\$1,133		\$1,547
National Australia Bank	Australia		\$112		
Northern Trust	United States	\$50			
Penserra Capital Management	United States		\$15		
PNC Financial Services	United States	\$245	\$132		
R. Seelaus & Co	United States		\$12		
Riyad Bank	Saudi Arabia	\$533			
Royal Bank of Canada	Canada	\$350	\$172		
SAR Holdings	United States		\$11		
Shank Williams Cisneros & Co	United States		\$8		
SMBC Group	Japan	\$420	\$664		
State Street	United States	\$50			\$16,818
TIAA	United States			\$155	
Toronto-Dominion Bank	Canada	\$420	\$218		
UBS	Switzerland				\$799
UniCredit	Italy	\$420	\$218		
US Bancorp	United States	\$420	\$218		
Vanguard	United States				\$9,970
Wellington Management	United States				\$1,324
Wells Fargo	United States	\$650	\$917		\$1,151
GRAND TOTAL		\$11,500	\$10,300	\$155	\$50,334

17. Northrop Grumman (United States)

COMPANY PROFILE

Northrop Grumman, is an aerospace, defence and security company, which conducts most of its business with the U.S. Department of Defence and intelligence community.³⁷⁹ Northrop Grumman is building the Sentinel, the new U.S. ICBM and is the prime contractor for Minuteman III sustainment. Northrop Grumman also produces propulsion systems for the Trident II missiles. In the financial year ending 31 December 2023, Northrop Grumman reported \$39.3 million in sales.³⁸⁰

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NUCLEAR WEAPONS

Northrop Grumman has sustained and modernized U.S. intercontinental ballistic missile systems for more than 65 years.³⁸¹ Under a \$13.3 billion nine-year contract awarded in 2020, Northrop Grumman is building the new intercontinental ballistic missile system for the U.S., the LGM-35A Sentinel.³⁸² While the Sentinel programme was initially estimated to cost \$95.3 billion, its estimated costs have rose dramatically to \$140.9 billion, an 81% increase, resulting in a severe breach of the Nunn-McCurdy act.³⁸³ The Pentagon nevertheless agreed to proceed with the Sentinel program.³⁸⁴

Northrop Grumman is also the prime contractor for sustaining Minuteman III (the current U.S. ICBM) propulsion and ground subsystems (hardware and system modifications for ground and airborne launch control systems, launch facilities and associated infrastructure) support.³⁸⁵ These contracts run until 2039 and have a potential value of \$4.6 billion and \$11.6 billion respectively.³⁸⁶

Northrop Grumman subsidiary ATK Launch Systems was awarded a \$86.4 million contract in 2018 for procurement of motor and component test, evaluation, engineering support, and disposal for all stages of Minuteman and Peacekeeper systems, which will run through 2026.³⁸⁷

ATK Launch Systems is also part of the Consolidated Nuclear Security (CNS), LLC joint venture that manages and operates the Y-12 National Security Complex and, until October 2024, the Pantex Plant³⁸⁸, where U.S. nuclear weapons are assembled.³⁸⁹ The Y-12 Complex is responsible for the remanufacture of components for the B61-12 nuclear gravity bomb, and the Pantex Plant for producing high explosives, requalifying the B61 pit, and final assembly of the complete B61-12 bomb for delivery to the U.S. Air Force.³⁹⁰ The Y-12 Complex and Pantex Plant also play a key role in the W88 nuclear warhead alteration (deployed on the Trident II D5 missile)³⁹¹, the W80 life extension program (for use in the U.S. Long Range Standoff Weapon)³⁹² and the W87 warhead modification (to be fielded on the new U.S. Sentinel ICBM)³⁹³, through the production of weapon and uranium components, and detonators, and high explosives respectively. The contract held by CNS is potentially valued at \$49.8 billion.³⁹⁴

Northrop Grumman also produces propulsion systems for the Trident II (D5) missiles.³⁹⁵ Northrop has several outstanding contracts for work on the Trident missiles in support of the U.S. and UK nuclear arsenals, with a combined potential value of over \$1 billion.³⁹⁶

Under an additional \$455.5 million contract, awarded in June 2022, Northrop Grumman will perform shipyard field operations, program management, systems engineering, documentation, logistics and hardware production activities in support of the Columbia and Dreadnought Fleet Ballistic Missile Program.³⁹⁷

Northrop Grumman is also integrating a Radar Aided Targeting System (RATS) into the B-2 Spirit Stealth Bomber, which “allows the B-2 to fully employ the B-61 mod 12 nuclear bomb.”³⁹⁸

FINANCIERS

The following table lists financing or investment relationships for the period 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 23: FINANCING AND INVESTMENT RELATIONSHIPS WITH NORTHROP GRUMMAN

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Academy Securities	United States		\$41		
Ameriprise Financial	United States				\$729
ANZ	Australia	\$118			
Bank of America	United States	\$385	\$319		\$1,294
Bank of New York Mellon	United States	\$118	\$48		
BlackRock	United States				\$3,407
Blaylock Beal Van	United States		\$8		
BNP Paribas	France	\$118	\$388		
Capital Group	United States				\$4,443
CastleOak Securities	United States		\$13		
Citigroup	United States	\$600			
Drexel Hamilton	United States		\$21		
Fidelity Investments	United States				\$993
First Abu Dhabi Bank	United Arab Emirates	\$118			
Franklin Resources	United States				\$659
Geode Capital Holdings	United States				\$1,301
Goldman Sachs	United States	\$118	\$338		
Government Pension Investment Fund (GPIF)	Japan				\$378
JPMorgan Chase	United States	\$385	\$725		\$1,606
Legal & General	United Kingdom				\$474
Mischler Financial Group	United States		\$21		
Mitsubishi UFJ Financial	Japan	\$118			
Mizuho Financial	Japan	\$306	\$663		
Morgan Stanley	United States	\$118	\$338		\$1,546
National Australia Bank	Australia		\$48		
National Pension Service	South Korea				\$644
Northwestern Mutual	United States			\$113	
Sanders Capital	United States				\$995
SAR Holdings	United States		\$21		
Scotiabank	Canada	\$118	\$48		
Shank Williams Cisneros & Co	United States		\$21		
SMBC Group	Japan	\$118	\$268		
State Street	United States	\$118			\$6,113
Sun Life Financial	Canada				\$1,327
Toronto-Dominion Bank	Canada	\$118	\$268		
Two Sigma Investments	United States				\$375
UBS	Switzerland	\$118	\$251		

UniCredit	Italy	\$385	\$48		
US Bancorp	United States	\$118	\$181		
Vanguard	United States			\$220	\$5,216
Wellington Management	United States				\$1,798
Wells Fargo	United States	\$906	\$840		
GRAND TOTAL		\$4,500	\$4,914	\$333	\$33,298

18. Peraton Inc (United States)

COMPANY PROFILE

Peraton is a U.S.-based national security and technology company, and one of the portfolio companies of private equity investment firm Veritas Capital.³⁹⁹ Peraton acquired Northrop Grumman's IT and Mission Support Services Business and government services company Perspecta in February and May 2021 respectively.⁴⁰⁰ The new company now offers services to federal government agencies across the intelligence, space, cyber, defence, citizen security, health, and state and local markets.⁴⁰¹ Peraton is contracted for work on the Minuteman system. Peraton is also a subcontractor in the management and operation of Sandia National Laboratory. Peraton's total revenue for 2023 was reportedly \$7 billion.⁴⁰²

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NUCLEAR WEAPONS

Until December 2024, Peraton held a \$32.6 million contract for Missile Applications Software Support to the Minuteman III system.⁴⁰³

Peraton is also a subcontractor in the management and operation of Sandia National Laboratory, with National Technology and Engineering Solutions of Sandia (NTESS) as primary contractor.⁴⁰⁴ Sandia National Laboratory is directly involved in the nuclear weapon modernisation programmes of at least the W88 Alt 37 warhead⁴⁰⁵ and the new W39/Mk7 program⁴⁰⁶ ((both used for arming the submarine launched Trident II (D5) missiles)), the W87-1 warhead for the new U.S. intercontinental ballistic missile⁴⁰⁷, the W80-4 warheads for the Long Range Standoff missiles⁴⁰⁸, and the new B61-12 gravity bomb⁴⁰⁹.⁴¹⁰ Sandia National Laboratory was also one of the design agencies for the refurbishment of the W76-1 warhead for the Trident II submarine-launched ballistic missiles.⁴¹¹

Peraton also holds a \$360 million contract running until 2039 to provide Nuclear Safety Cross-Check Analysis (NSCCA) and Nuclear Safety Analysis and Technical Evaluation (NSATE) support for the Minuteman III.⁴¹²

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 24: FINANCING RELATIONSHIPS WITH PERATON

INSTITUTION	COUNTRY	LOANS
Alter Domus	Luxembourg	\$205
Bank of America	United States	\$396
Barclays	United Kingdom	\$1,217
BMO Financial Group	Canada	\$18
Capital One Financial	United States	\$125
Citizens Financial Group	United States	\$125
Fifth Third Bancorp	United States	\$125
Goldman Sachs	United States	\$850
Jefferies Financial Group	United States	\$18
JPMorgan Chase	United States	\$1,561
KKR Group	United States	\$1,840
Lloyds Banking Group	United Kingdom	\$52

Macquarie Group	Australia	\$1,290
Mitsubishi UFJ Financial	Japan	\$254
Mizuho Financial	Japan	\$272
Northwestern Mutual	United States	\$616
PNC Financial Services	United States	\$125
Regions Financial	United States	\$125
Royal Bank of Canada	Canada	\$1,269
Santander	Spain	\$125
Scotiabank	Canada	\$125
SMBC Group	Japan	\$52
Sun Life Financial	Canada	\$482
Toronto-Dominion Bank	Canada	\$125
UBS	Switzerland	\$1,111
US Bancorp	United States	\$125
Veritas Capital Fund Management	United States	\$274
Wells Fargo	United States	\$125
GRAND TOTAL		\$13,025

19. Rolls-Royce (United Kingdom)

COMPANY PROFILE

Rolls-Royce is a British company operating in the aerospace, defence and power systems markets.⁴¹³ Rolls-Royce produces key components for UK nuclear armed submarines. For the year 2023, Rolls-Royce reported revenues of £15.4 billion.⁴¹⁴

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NUCLEAR WEAPONS

Rolls Royce builds the nuclear propulsion systems for the new UK Dreadnought nuclear armed submarines.⁴¹⁵ In 2019, the UK government awarded Rolls-Royce Submarines with a contract worth nearly £480 million for the Dreadnought's nuclear propulsion power plants.⁴¹⁶ Rolls-Royce is also part of the Dreadnought Alliance, a joint management team between the Submarine Delivery Agency (SDA) of the British Ministry of Defence, BAE Systems and Rolls-Royce.⁴¹⁷ In May 2022, the Ministry of Defence announced it had awarded additional contracts for the Dreadnought programme of over £2 billion to Rolls-Royce and BAE Systems, as an initial investment within a planned overall total of £10 billion for the whole delivery phase.⁴¹⁸ In January 2025, Rolls-Royce signed an eight-year contract with the UK Ministry of Defence to support the UK Royal Navy's fleet of submarines.⁴¹⁹ The contract includes work on the Dreadnought-class and is valued at around £9 billion.

FINANCIERS

The following table lists financing and investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 25: FINANCING AND INVESTMENT RELATIONSHIPS WITH ROLLS-ROYCE

INSTITUTION	COUNTRY	LOANS	BONDHOLDING	SHAREHOLDING
Abrams Capital Management	United States			\$619
Aegon	Netherlands		\$38	
Allianz	Germany		\$162	
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$62		
Bank of America	United States	\$115		
Bank of China	China	\$115		
Barclays	United Kingdom	\$181		
BayernLB	Germany	\$230		
BlackRock	United States		\$43	\$3,151
BNP Paribas	France	\$1,710		
Capital Group	United States			\$3,117
Causeway Capital Holdings	United States			\$1,958
Citigroup	United States	\$621		
Commerzbank	Germany	\$287		
Crédit Agricole	France	\$621		
DBS	Singapore	\$115		

Deutsche Bank	Germany	\$385		
European Investment Bank	Luxembourg	\$430		
Exor	Netherlands			\$348
Fidelity International	Bermuda			\$407
Fidelity Investments	United States			\$643
Geode Capital Holdings	United States			\$326
Goldman Sachs	United States	\$244		
Government Pension Fund Global (GPF)	Norway			\$769
GQG Partners	United States			\$589
Groupe BPCE	France	\$115		\$2,454
HSBC	United Kingdom	\$726		
Intesa Sanpaolo	Italy	\$115		
Invesco	United States			\$342
Investment Corporation of Dubai	United Arab Emirates	\$115		
JPMorgan Chase	United States	\$451		
Legal & General	United Kingdom			\$603
Lloyds Banking Group	United Kingdom	\$451		
Lone Pine Capital	United States			\$359
Marathon-London	United Kingdom			\$339
Mitsubishi UFJ Financial	Japan	\$181		
Mizuho Financial	Japan	\$385		
Morgan Stanley	United States		\$32	
NatWest	United Kingdom	\$115		
New York Life Insurance	United States		\$28	
Orbis Group	Bermuda			\$423
Royal Bank of Canada	Canada	\$178		
Royal London Group	United Kingdom		\$58	
Ruane, Cunniff & Goldfarb	United States			\$419
Santander	Spain	\$513		
Skandinaviska Enskilda Banken	Sweden	\$451		
SMBC Group	Japan	\$181		
Société Générale	France	\$451		
Standard Chartered	United Kingdom	\$513		
State Street	United States			\$452
Sun Life Financial	Canada			\$1,928
T. Rowe Price	United States			\$472
Toronto-Dominion Bank	Canada	\$181		
UBS	Switzerland	\$550		
UniCredit	Italy	\$181		
Vanguard	United States			\$1,672
Wellington Management	United States		\$25	
GRAND TOTAL		\$10,974	\$385	\$21,388

20. RTX Corporation (United States)

COMPANY PROFILE

In July 2023, Raytheon Technologies Corporation, a company which had been the result of a 2020 merger between Raytheon and United Technologies⁴²⁰, formally rebranded as RTX Corporation.⁴²¹ RTX produces aviation, space and defence systems.⁴²² RTX is the world's second largest arms producing company.⁴²³ The company is involved in the production of the Sentinel ICBM and the Long Range Standoff (LRSO) weapons system as well as the sustainment of the Minuteman programme for the U.S. arsenal. RTX reported sales of \$74.3 billion in 2023.⁴²⁴

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NUCLEAR WEAPONS

In July 2021, RTX received a \$2 billion, six-year contract from the U.S. Air Force Nuclear Weapons Center at Eglin Air Force Base for continued development and manufacture of the Long Range Standoff (LRSO) weapons system.⁴²⁵

Collins Aerospace, an RTX unit, will build the secondary launch platform-airborne system for the Sentinel, the new U.S. intercontinental ballistic missile.⁴²⁶ This key component for nuclear weapons command and control also works with the existing Minuteman III system.⁴²⁷

Collins Aerospace also has two outstanding contracts for work on the Very-Low Frequency (VLF) communications system for nuclear weapons command and control, together valued at \$167 million.⁴²⁸ The U.S. Air Force Nuclear Weapons Center also awarded Raytheon a \$625 million contract to support the Advanced Beyond Line-of-Sight Terminals (FAB-T) program for the command of nuclear forces.⁴²⁹

In 2022, RTX also received a £160 million contract to train the crew of the UK Dreadnought nuclear-armed submarine at HM Naval Base Clyde.⁴³⁰

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 27: FINANCING AND INVESTMENT RELATIONSHIPS WITH RTX

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Ameriprise Financial	United States				\$819
Bancroft Capital (PA)	United States		\$20		
Bank of America	United States	\$3,513	\$684		\$1,183
Bank of New York Mellon	United States	\$350	\$32		
Barclays	United Kingdom	\$350	\$297		
BlackRock	United States				\$6,998
Blaylock Beal Van	United States		\$17		
BMO Financial Group	Canada	\$150	\$32		
BNP Paribas	France	\$978	\$501		
Capital Group	United States				\$20,466
CastleOak Securities	United States		\$37		

Charles Schwab	United States				\$1,015
Citigroup	United States	\$3,513	\$1,545		
CL King & Associates	United States		\$17		
Crédit Agricole	France	\$200	\$297		
DBS	Singapore	\$778			
Deutsche Bank	Germany	\$978	\$648		
Dodge & Cox	United States				\$4,446
Fisher Investments	United States				\$1,769
Franklin Resources	United States				\$2,157
Geode Capital Holdings	United States				\$2,686
Goldman Sachs	United States	\$2,898	\$1,545		
Government Pension Fund Global (GPF)	Norway			\$264	
JPMorgan Chase	United States	\$3,136	\$684		\$1,301
Legal & General	United Kingdom				\$861
MFR	United States		\$20		
Mischler Financial Group	United States		\$37		
Mitsubishi UFJ Financial	Japan		\$32		
Mizuho Financial	Japan	\$200	\$297		
Morgan Stanley	United States	\$2,898	\$831		\$2,504
National Australia Bank	Australia		\$32		
R. Seelaus & Co	United States		\$37		
Riyad Bank	Saudi Arabia	\$629			
Royal Bank of Canada	Canada	\$200	\$297		
Sanders Capital	United States				\$1,094
SAR Holdings	United States		\$37		
Scotiabank	Canada	\$429	\$32		
Shank Williams Cisneros & Co	United States		\$44		
SMBC Group	Japan	\$200	\$297		
State Bank of India	India	\$200			
State Street	United States				\$11,569
Sun Life Financial	Canada				\$1,552
T. Rowe Price	United States				\$845
UBS	Switzerland		\$32		\$885
UniCredit	Italy	\$200	\$297		
US Bancorp	United States		\$32		
Vanguard	United States				\$11,583
Wellington Management	United States				\$1,305
Wells Fargo	United States	\$1,200	\$297		
GRAND TOTAL		\$23,000	\$9,000	\$264	\$75,040

21. Safran (France)

COMPANY PROFILE

Safran, based in France, is a high-technology company operating in the aviation (propulsion, equipment and interiors), defence and space markets.⁴³¹ Safran is a 50% owner of ArianeGroup, which has contracts for French nuclear missile production.⁴³² In the financial year ending 31 December 2023 Safran reported revenues of €23.2 billion.⁴³³

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NUCLEAR WEAPONS

ArianeGroup is responsible for the ongoing maintenance of the French M51 submarine launched ballistic missiles.⁴³⁴ ArianeGroup states that its role in the M51 production includes “upstream studies, development, production and through-life support and maintaining operational readiness”.⁴³⁵ ArianeGroup is also responsible for end-of-life disposal.⁴³⁶ Through ArianeGroup, Safran is also contracted for the development of the third version of the ballistic missile, the M51.3, to be completed around 2025.⁴³⁷

Until December 2024, Safran’s subsidiary, Safran Ceramics, was involved in the design, development, manufacture and sale of solid propulsion systems and related equipment for all types of rockets and tactical and cruise missiles for air, sea and ground forces, through a joint venture with MBDA called Roxel.⁴³⁸ Roxel is also involved in ASMP/ ASMP-A missile production, providing boosters and additional devices.⁴³⁹ On 6 January 2025, MBDA announced it finalized the acquisition of Safran’s 50% share of Roxel, integrating the company as a wholly-owned subsidiary.⁴⁴⁰

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 28: FINANCING AND INVESTMENT RELATIONSHIPS WITH SAFRAN

INSTITUTION	COUNTRY	LOANS	BONDHOLDING	SHAREHOLDING
Artisan Partners	United States			\$1,140
BlackRock	United States			\$2,084
Calamos Investments	United States		\$17	
Capital Group	United States			\$11,708
Children's Investment Fund Management	United Kingdom			\$4,306
Crédit Agricole	France	\$526		\$649
European Investment Bank	Luxembourg	\$598		
Fidelity Investments	United States			\$1,620
Geode Capital Holdings	United States			\$498
Groupe BPCE	France	\$526		
Lazard	Bermuda		\$50	
Mitsubishi UFJ Financial	Japan	\$526		
Ontario Teachers' Pension Plan	Canada			\$506

Royal Bank of Canada	Canada			\$503
Santander	Spain	\$526		
Vanguard	United States			\$2,190
WCM Investment Management	United States			\$799
GRAND TOTAL		\$2,702	\$66	\$26,002

22. Textron (United States)

COMPANY PROFILE

Textron is a U.S.-based multi-industry company engaged in aircraft, military, industrial and finance businesses.⁴⁴¹ Textron brands include Cessna, Beechcraft, Bell, Artic Cat and more.⁴⁴² The company carries out work for the U.S. Minuteman missiles and is involved in the production of the Sentinel, the new U.S. ICBM. In the financial year ending 30 December 2023, Textron reported revenues of \$13.7 billion⁴⁴³

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NUCLEAR WEAPONS

Textron Systems was awarded a contract in 2014 for multiprobe antennas for the Minuteman missiles. The contract has a \$66.1 million potential value and is expected to continue until at least July 2025.⁴⁴⁴

Textron also has a contract for Mod 5F midsections for the Minuteman Missiles. Initially awarded in 2014, the contract is expected to continue until at least March 2025 with an estimated total value of \$39.9 million.⁴⁴⁵

Textron Systems is developing the re-entry system technology for the Sentinel, the new U.S. intercontinental ballistic missile.⁴⁴⁶

FINANCIERS

The following table lists financing or investment relationships for between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 29: FINANCING AND INVESTMENT RELATIONSHIPS WITH TEXTRON

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	BONDHOLDING	SHAREHOLDING
Allianz	Germany			\$24	
AQR Capital Management	United States				\$125
Baird	United States			\$20	
Bank of America	United States	\$248			
Bank of China	China	\$43			
Bank of New York Mellon	United States	\$58	\$6		
BlackRock	United States				\$1,149
Brandes Investment Partners	United States				\$133
Charles Schwab	United States				\$145
Citigroup	United States	\$248			
Dimensional Fund Advisors	United States				\$241
Export-Import Bank of the United States	United States	\$175			
Fidelity Investments	United States				\$165
Franklin Resources	United States			\$119	
Gabelli Funds	United States				\$214
Geode Capital Holdings	United States				\$386
Goldman Sachs	United States	\$205	\$88		
Groupe BPCE	France			\$54	
Invesco	United States				\$569

Jackson Financial	United States			\$18	
JPMorgan Chase	United States	\$235	\$88		\$389
Legal & General	United Kingdom				\$121
Loop Capital	United States		\$6		
LSV Asset Management	United States				\$336
Mariner Wealth Advisors	United States				\$87
Mitsubishi UFJ Financial	Japan	\$248	\$36		
Morgan Stanley	United States				\$124
National Western Life Group	United States			\$19	
Northern Trust	United States	\$163			\$95
Orix Corporation	Japan				\$603
PNC Financial Services	United States	\$353	\$27		
Power Corporation of Canada	Canada			\$48	
Primecap Management	United States				\$456
Shank Williams Cisneros & Co	United States		\$6		
SMBC Group	Japan	\$85	\$36		
State Street	United States				\$757
T. Rowe Price	United States				\$1,406
The Hartford	United States			\$56	
TIAA	United States			\$62	
Toronto-Dominion Bank	Canada				\$93
US Bancorp	United States	\$205	\$27		
Vanguard	United States			\$19	\$1,867
Victory Capital	United States				\$527
Wells Fargo	United States	\$85	\$31		
Wintrust Financial Corporation	United States				\$88
GRAND TOTAL		\$2,350	\$350	\$439	\$10,077

23. Thales (France)

COMPANY PROFILE

Thales is a French-headquartered company engaged in digital identity and cybersecurity, defence and security, aerospace and space.⁴⁴⁷ The French state (26.06%) and aircraft manufacturer Dassault Aviation (26.05%) are the main shareholders of Thales.⁴⁴⁸ The company is involved in the French ASMPA mid-life up-grade and the M51 missile adaptation for French submarines. For the financial year ending 31 December 2023, Thales reported sales of € 18.4 billion.⁴⁴⁹

Thales has a 35% shareholding in Naval Group, a French-law Public Limited Company which, on 31 December 2023, was, in addition to Thales' share, owned for 62.25% by the French State, 1.74% by the Group's employees and former employees through the company employee mutual fund, 0.99% by the company Naval Group Actionnariat and 0.02% directly by employees of the company.⁴⁵⁰

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NUCLEAR WEAPONS

Thales states it “does not design, produce or sell nuclear weapons”.⁴⁵¹ The company adds it is one of the “140+ direct suppliers on the French nuclear missile program, making electronic systems in line with our main areas of expertise, that are not specific to the nuclear nature of the missile”.⁴⁵² According to the French Ministry of Defence, however, Thales SIX is one of MBDA's main six subcontractors in the French ASMPA mid-life upgrade.⁴⁵³ The ASMPA is a medium-range air-to-ground nuclear armed cruise missile, and part of the French nuclear arsenal.⁴⁵⁴

The French Ministry of Defence also lists Naval Group, of which Thales has 35% ownership, as the main contractor for the M51 missile adaptation for the French nuclear submarines.⁴⁵⁵ Naval Group is also currently developing a third-generation nuclear armed submarine (SNLE 3G) for France.⁴⁵⁶ The programme is aimed at replacing the four Le Triomphant nuclear armed submarines, with delivery starting in 2035.⁴⁵⁷ Thales is contracted by the French Ministry of Defence to develop a new sonar suite for these third-generation nuclear armed submarines.⁴⁵⁸

Furthermore, Thales Glasgow was awarded an £169 million contract in July 2023 to provide ‘optronic masts’ for all four future nuclear deterrent submarines (HMS Dreadnought, Valiant, Warspite, and George VI).⁴⁵⁹ These periscopes support communications on top of assisting with targeting, navigation and situational awareness.⁴⁶⁰

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 30: FINANCING AND INVESTMENT RELATIONSHIPS WITH THALES

INSTITUTION	COUNTRY	LOANS	UNDERWRITING	SHAREHOLDING
ANZ	Australia	\$163		
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$219	\$189	
Barclays	United Kingdom	\$163	\$112	
BlackRock	United States			\$469
BNP Paribas	France	\$219	\$225	

Capital Group	United States			\$652
Citigroup	United States	\$163	\$112	
Commerzbank	Germany	\$219	\$189	
Crédit Agricole	France	\$393	\$301	
Crédit Mutuel	France	\$219	\$112	
Deutsche Bank	Germany	\$219	\$301	
Fidelity Investments	United States			\$180
First Trust Advisors	United States			\$214
Franklin Resources	United States			\$363
Government Pension Fund Global (GPF)	Norway			\$345
GQG Partners	United States			\$333
Groupe BPCE	France	\$163	\$189	\$243
HSBC	United Kingdom	\$219	\$112	
JPMorgan Chase	United States	\$219	\$189	
Mawer Investment Management	Canada			\$227
Santander	Spain	\$219	\$112	
SMBC Group	Japan	\$163		
Société Générale	France	\$219	\$112	
Standard Chartered	United Kingdom	\$163		
Sun Life Financial	Canada			\$215
UniCredit	Italy	\$219	\$189	
Vanguard	United States			\$461
GRAND TOTAL		\$3,563	\$2,446	\$3,702

24. Walchandnagar Industries (India)

COMPANY PROFILE

Walchandnagar Industries Limited (WIL), based in India, is a heavy engineering and high-tech manufacturing company with activities in the areas of nuclear power, aerospace, missile, defence, oil & gas, steam generation plants, independent power projects, turnkey cement, and sugar plants.⁴⁶¹ Walchandnagar Industries is involved in India's nuclear-capable Agni missiles and has supplied "critical" equipment for India's first indigenous nuclear powered ballistic missile submarine, the INS Arihant. In the financial year ending 31 March 2024, WIL generated revenues of INR 3236 million.⁴⁶²

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NUCLEAR WEAPONS

Walchandnagar Industries Limited (WIL) states it is "engaged in inherently sensitive and secretive missile, aerospace and nuclear programs of national importance."⁴⁶³ It has developed various processes, including welding technology, for manufacture of motor cases for Agni nuclear-capable missiles and has executed launcher projects with associated hydraulics and control systems for the Agni programme.⁴⁶⁴ WIL is also involved in the Agni V missile, which is nearing deployment.⁴⁶⁵

Walchandnagar also states it supplied "critical equipment" for India's first indigenous nuclear powered ballistic missile submarine, the INS Arihant.⁴⁶⁶ Sources indicate that the Arihant will primarily serve as a training vessel and technology demonstrator and will not be deployed for nuclear deterrence patrols as additional SSBNs come online.⁴⁶⁷ A second SSBN, the INS Arighat, was commissioned into service in August 2024 and a third submarine, the S4, was reportedly launched in November 2021.⁴⁶⁸ India is also developing the S5 class submarine.⁴⁶⁹

FINANCIERS

The following table lists financing or investment relationships between 1 January 2022 – 31 August 2024. All figures are in USD millions.

TABLE 31: INVESTMENT RELATIONSHIPS WITH WALCHANDNAGAR INDUSTRIES

INSTITUTION	COUNTRY	SHAREHOLDING
Mahima Stocks	India	\$3

Financiers and Profiteers

There are a total of 260 financial institutions with substantial financing or investment relationships to at least one of the 24 nuclear weapons producing companies profiled in this report. Most of these banks, pension funds, insurers and asset managers are based in countries that either possess nuclear weapons of their own or otherwise rely on nuclear weapons in their security policies.

Governments award contracts to companies to build the key components for nuclear weapons and to manage and operate the facilities where nuclear weapons are produced. To secure those contracts, companies need to raise capital through loans or by issuing bonds. Many of the companies involved in nuclear weapon production are also publicly traded, so both individuals and institutions share profits (and losses).

Against the backdrop of wars in Ukraine and the Middle East, European and U.S. defence firms have been the beneficiaries of record levels of military spending.⁴⁷⁰ The stock market value of many European defence companies, including Leonardo, BAE Systems, Thales and Safran, has also risen sharply since the Russian invasion of Ukraine.⁴⁷¹ Some U.S. arms companies, including Huntington Ingalls Industries, Lockheed Martin, General Dynamics and Northrop Grumman, also saw their share prices grow.⁴⁷²

The financial institutions listed in this report enable these companies to continue their involvement in the development and production of weapons of mass destruction, in spite of the devastating consequences that would arise from any nuclear weapon use.

By actively rejecting any association with these indiscriminate weapons, financial actors can exert positive influence on a company's scope of activities. Public exclusions by investors build on and reinforce the message that nuclear weapons are unacceptable, which will increase the pressure felt by these

companies to move away from this problematic industry.

The financial information included here comprises financial institutions participating in loans and underwriting deals since 1 January 2022, as well as those involved in loans which have been closed before that date but have not yet matured before 1 October 2023. When it comes to investments in shares or bonds of the weapons companies, a group-level threshold of at least 0.5% of the outstanding shares or bonds at most recent filing dates is applied per financial institution. As of August 2024, data was collected at the most recent filing date, which in most cases corresponds to June 28th, 2024.

Key findings

260 financial institutions finance 24 nuclear weapon producers

Between January 2022 and August 2024, 260 banks, pension funds, insurance companies, asset managers and other financial institutions had substantial financing or investment relations with one or more of the 24 nuclear weapon producing companies profiled in this report, down from 287 institutions in previously published results.

\$514 billion held in bonds and shares in 24 nuclear weapon producing companies

Investors held \$513,576 million in bonds and shares in the 24 companies involved in nuclear weapon production. This is an increase of \$36.7 billion since the last Don't Bank on the Bomb financial analysis.

\$270 billion in loans and underwriting provided to 24 nuclear weapon producing companies

During the analysed period, \$269,958 million was provided to the 24 nuclear weapon manufacturers in loans and underwriting, a drop of \$6.2 billion since the last Don't Bank on the Bomb financial analysis.

Total financing, countries of origin

There are a total of 260 institutions with financing or investment relationships to the nuclear weapon producing companies, from 24 countries. Most of these investments come from countries that either possess nuclear weapons of their own or otherwise

endorse the use of nuclear weapons. With the exception of four financial institutions (from South Africa), none of the financiers come from countries that have joined the Treaty on the Prohibition of Nuclear Weapons (TPNW).

TABLE 32: FINANCIERS BY COUNTRY OF ORIGIN. ALL FIGURES IN USD MILLIONS.

COUNTRY	TOTAL NUMBER OF FINANCIERS	TOTAL BONDS AND SHARES	TOTAL LOANS AND UNDERWRITING
Australia	5	\$881	\$4,875
Bahrain	1		\$58
Bermuda	4	\$1,793	
Canada	13	\$16,290	\$19,097
China	14	\$539	\$5,389
Denmark	1		\$350
France	8	\$8,149	\$26,294
Germany	7	\$1,382	\$11,121
India	11	\$707	\$883
Italy	9	\$6	\$6,356
Japan	7	\$5,089	\$30,985
Luxembourg	2		\$2,443
Netherlands	3	\$439	\$321
Norway	1	\$2,732	
Saudi Arabia	2	\$683	\$1,427
Singapore	1		\$2,475
South Africa	4	\$273	\$74
South Korea	2	\$1,017	
Spain	4	\$4,562	\$7,434
Sweden	1		\$1,094
Switzerland	1	\$2,493	\$3,212
United Arab Emirates	2		\$1,739
United Kingdom	15	\$13,438	\$17,130
United States	142	\$453,104	\$127,201
GRAND TOTAL		\$513,576	\$269,958

Top 10 financiers

With the exception of Sun Life Financial (Canada), the top 10 investors (holding shares or bonds) are all based in the United States. Their combined investments in the 24 nuclear weapon producing companies totals \$350,756 million, more than 68% of all investments.

TABLE 33: TOP 10 INVESTORS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Vanguard	United States	\$78,516	\$72,487	\$6,030
Capital Group	United States	\$73,803	\$62,548	\$11,255
BlackRock	United States	\$57,661	\$53,161	\$4,499
State Street	United States	\$55,449	\$55,503	\$-54
Geode Capital Holdings	United States	\$16,545	\$13,865	\$2,680
Fidelity Investments	United States	\$16,288	\$15,297	\$991
Wellington Management	United States	\$16,002	\$18,712	\$-2,710
Newport Group	United States	\$13,593	\$14,310	\$-717
Sun Life Financial	Canada	\$12,118	\$8,733	\$3,385
Morgan Stanley	United States	\$10,780	\$9,098	\$1,682
GRAND TOTAL		\$350,756	\$323,714	\$27,042

The top 10 bond and shareholders, not including U.S. based investors, hold a combined investment of \$44,589 million, almost 9% of investments.

TABLE 34: TOP 10 NON-U.S. INVESTORS. ALL FIGURES IN USD MILLIONS

INSTITUTION	COUNTRY	AMOUNT
Sun Life Financial	Canada	\$12,118
Groupe BPCE	France	\$5,561
Legal & General	United Kingdom	\$5,287
Sociedad Estatal de Participaciones Industriales	Spain	\$4,463
Children's Investment Fund Management	United Kingdom	\$4,306
Government Pension Investment Fund (GPIF)	Japan	\$2,892
Government Pension Fund Global (GPF)	Norway	\$2,732
Crédit Agricole	France	\$2,579
UBS	Switzerland	\$2,493
Orix Corporation	Japan	\$2,158
GRAND TOTAL		\$44,589

The top 10 creditors provided \$146,731 million in loans and underwriting to the 24 nuclear weapon producing companies, more than 54% of all financing.

TABLE 35: TOP 10 CREDITORS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Bank of America	United States	\$23,909	\$21,838	\$2,070
Citigroup	United States	\$23,119	\$23,685	\$-566
JPMorgan Chase	United States	\$20,163	\$20,451	\$-288
Wells Fargo	United States	\$14,690	\$15,448	\$-758
Goldman Sachs	United States	\$12,290	\$10,250	\$2,040
BNP Paribas	France	\$11,400	\$11,382	\$18
Mizuho Financial	Japan	\$11,394	\$11,720	\$-326
SMBC Group	Japan	\$10,446	\$9,929	\$517
Morgan Stanley	United States	\$10,228	\$7,957	\$2,271
Mitsubishi UFJ Financial	Japan	\$9,092	\$10,106	\$-1,014
GRAND TOTAL		\$146,731	\$142,765	\$3,966

Types of financing compared

Overall bondholding value continued to decrease in 2024, with a drop of \$520 million compared to findings in 2023. Total shareholding value, on the other hand, went up again in 2024, with an increase of \$37.3 billion compared to previously published results.

TABLE 36: BOND- AND SHAREHOLDING COMPARED 2024-2021. ALL FIGURES IN USD MILLIONS

INSTITUTION	2024	2023	2022	2021
Bondholding	\$5.455	\$5.975	\$6.749	\$7.820
Shareholding	\$508.122	\$470.868	\$454.413	\$345.919
GRAND TOTAL	\$513,576	\$476,843	\$461,162	\$353,739

Total loans extended decreased in 2024 with \$16.3 billion compared to previously published findings. The number of lenders has also dropped. Total underwriting, on the other hand, increased by \$10.1 billion.

TABLE 37: LOANS AND UNDERWRITING COMPARED 2024-2021. ALL FIGURES IN USD MILLIONS

INSTITUTION	2024	2023	2022	2021
Loans	\$205,317	\$221,625	\$180,208	\$211,399
Underwriting	\$64,641	\$54,531	\$105,307	\$120,046
GRAND TOTAL	\$269,958	\$276,155	\$285,515	\$331,445

Shareholding

A look at the top 10 shareholders, all but one from the US, shows \$26.8 billion growth in the total value of shares held in this group. Just like in previous years, the total value of shareholding increased compared to the previously published findings, by \$37.3 billion.

TABLE 38: TOP 10 SHAREHOLDERS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Vanguard	United States	\$77,584	\$71,796	\$5,788
Capital Group	United States	\$73,803	\$62,526	\$11,277
BlackRock	United States	\$57,524	\$53,123	\$4,401
State Street	United States	\$55,430	\$55,492	\$-62
Geode Capital Holdings	United States	\$16,545	\$13,865	\$2,680
Fidelity Investments	United States	\$16,272	\$15,297	\$975
Wellington Management	United States	\$15,977	\$18,592	\$-2,615
Newport Group	United States	\$13,593	\$14,310	\$-717
Sun Life Financial	Canada	\$12,118	\$8,733	\$3,385
Morgan Stanley	United States	\$10,748	\$9,069	\$1,679
GRAND TOTAL		\$349,595	\$322,803	\$26,792

Bondholding

Bondholding values of the top 10 investors increased by \$442 million, while overall bondholding fell by \$520 million to \$5.5 billion.

TABLE 39: TOP 10 BONDHOLDERS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Vanguard	United States	\$932	\$691	\$241
Franklin Resources	United States	\$579	\$548	\$31
Allianz	Germany	\$559	\$405	\$154
TIAA	United States	\$346	\$434	\$-88
Prudential Financial (US)	United States	\$291	\$330	\$-39
Government Pension Fund Global (GPF)	Norway	\$264	\$0	\$264
Baird	United States	\$262	\$276	\$-14
State Farm	United States	\$188	\$378	\$-191
Lord, Abnett & Co	United States	\$176	\$165	\$11
Groupe BPCE	France	\$140	\$69	\$72
GRAND TOTAL		\$3,737	\$3,296	\$442

Loans

Total loans provided to the nuclear weapon producing companies has decreased by \$16.3 billion, compared to previously published findings. The top 10 lenders also show a \$5.2 billion decrease.

TABLE 40: TOP 10 LENDERS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
Bank of America	United States	\$18,784	\$16,792	\$1,992
Citigroup	United States	\$18,384	\$20,129	\$-1,745
JPMorgan Chase	United States	\$14,480	\$15,443	\$-963
Wells Fargo	United States	\$9,965	\$11,359	\$-1,394
Mitsubishi UFJ Financial	Japan	\$8,529	\$8,838	\$-309
BNP Paribas	France	\$8,466	\$9,286	\$-820
Goldman Sachs	United States	\$7,356	\$6,464	\$892
Mizuho Financial	Japan	\$7,328	\$8,923	\$-1,595
SMBC Group	Japan	\$6,600	\$7,125	\$-525
Crédit Agricole	France	\$6,001	\$6,759	\$-758
GRAND TOTAL		\$105,894	\$111,117	\$-5,223

Issuances

The total number of underwriting, or bond or share issuances grew from \$54.5 billion to \$64.6 billion, compared to the last Don't Bank on the Bomb financial analysis. The top 10 issuances increased by \$8.3 billion.

TABLE 41: TOP 10 BOND OR SHARE ISSUERS COMPARED. ALL FIGURES IN USD MILLIONS.

INSTITUTION	COUNTRY	2024	2023	CHANGE
JPMorgan Chase	United States	\$5,683	\$5,008	\$675
Bank of America	United States	\$5,125	\$5,046	\$78
Goldman Sachs	United States	\$4,935	\$3,786	\$1,148
Citigroup	United States	\$4,736	\$3,556	\$1,179
Wells Fargo	United States	\$4,724	\$4,089	\$636
Morgan Stanley	United States	\$4,694	\$3,778	\$916
Mizuho Financial	Japan	\$4,065	\$2,797	\$1,269
SMBC Group	Japan	\$3,846	\$2,804	\$1,042
Deutsche Bank	Germany	\$2,997	\$2,497	\$500
BNP Paribas	France	\$2,934	\$2,096	\$838
GRAND TOTAL		\$43,738	\$35,458	\$8,280

Total financing

Total investments (share and bondholding)

This selection of financial institutions is limited by a reporting threshold. Only holdings of at least 0.5% of the total number of outstanding bonds or shares of the nuclear weapons producing companies are listed.

INSTITUTION	COUNTRY	AIRBUS	BARCOCK INTERNATIONAL	BAE SYSTEMS	BHARAT DYNAMICS	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	WALCHANDNAGAR INDUSTRIES	GRAND TOTAL	
Abrams Bison Investments	United States		\$141																					\$141	
Abrams Capital Management	United States																	\$619							\$619
Absolute Investment Advisers	United States							\$12																	\$12
Aditya Birla Capital	India				\$17																				\$17
Aegon	Netherlands		\$53															\$38							\$91
Affiliated Managers Group	United States		\$81																						\$81
Allianz	Germany		\$9					\$141			\$142	\$15		\$64				\$162				\$24			\$559
Allspring Global Investments	United States											\$415	\$452												\$867
American Century Investments	United States										\$117														\$117
American National Insurance	United States							\$14																	\$14
Ameriprise Financial	United States		\$24					\$9	\$601	\$1,756			\$392			\$880	\$729		\$819						\$5,209
Anchor Capita	United States							\$50																	\$50
AQR Capital Management	United States										\$180											\$125			\$305
Aristotle Capital Management	United States								\$859	\$994															\$1,853
Aristotle Pacific Capital	United States										\$20			\$26											\$45
Artisan Partners	United States			\$648																\$1,140					\$1,788
Auto-Owners Insurance	United States							\$15																	\$15
AXA	France		\$10																						\$10
Axis Bank	India				\$33																				\$33
Baillie Gifford	United Kingdom		\$102																						\$102
Baird	United States										\$48	\$52		\$143								\$20			\$262
Banco Mediolanum	Italy														\$6										\$6
Bank of America	United States					\$1,417		\$64	\$2,207	\$2,870	\$97	\$105	\$258			\$1,151	\$1,294		\$1,183						\$10,647
Bank of New York Mellon	United States			\$354				\$91			\$79		\$242												\$766
BlackRock	United States	\$4,843	\$117	\$5,298	\$16	\$5,706		\$842	\$3,355	\$7,126	\$754	\$849	\$3,629	\$1,734	\$168	\$5,922	\$3,407	\$3,194	\$6,998	\$2,084	\$1,149	\$469			\$57,661
Brandes Investment Partners	United States																					\$133			\$133
Brookfield Corporation	Canada		\$74																						\$74
Brown Advisory	United States							\$101																	\$101
Calamos Investments	United States							\$32												\$17					\$49
California Public Employees' Retirement System (CalPERS)	United States										\$33	\$10	\$30	\$27											\$99
Canada Pension Plan Investment Board	Canada	\$682																							\$682

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BHARAT DYNAMICS	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	WALCHANDNAGAR INDUSTRIES	GRAND TOTAL	
Abrams Bison Investments	United States		\$141																					\$141	
Abrams Capital Management	United States																	\$619							\$619
Absolute Investment Advisers	United States							\$12																	\$12
Aditya Birla Capital	India				\$17																				\$17
Aegon	Netherlands		\$53															\$38							\$91
Affiliated Managers Group	United States		\$81																						\$81
Allianz	Germany		\$9					\$141			\$142	\$15		\$64				\$162				\$24			\$559
Allspring Global Investments	United States											\$415	\$452												\$867
American Century Investments	United States										\$117														\$117
American National Insurance	United States							\$14																	\$14
Ameriprise Financial	United States		\$24					\$9	\$601	\$1,756			\$392			\$880	\$729		\$819						\$5,209
Anchor Capita	United States							\$50																	\$50
AQR Capital Management	United States										\$180											\$125			\$305
Aristotle Capital Management	United States								\$859	\$994															\$1,853
Aristotle Pacific Capital	United States										\$20			\$26											\$45
Artisan Partners	United States			\$648																\$1,140					\$1,788
Auto-Owners Insurance	United States							\$15																	\$15
AXA	France		\$10																						\$10
Axis Bank	India				\$33																				\$33
Baillie Gifford	United Kingdom		\$102																						\$102
Baird	United States										\$48	\$52		\$143								\$20			\$262
Banco Mediolanum	Italy														\$6										\$6
Bank of America	United States					\$1,417		\$64	\$2,207	\$2,870	\$97	\$105	\$258			\$1,151	\$1,294		\$1,183						\$10,647
Bank of New York Mellon	United States			\$354				\$91			\$79		\$242												\$766
BlackRock	United States	\$4,843	\$117	\$5,298	\$16	\$5,706		\$842	\$3,355	\$7,126	\$754	\$849	\$3,629	\$1,734	\$168	\$5,922	\$3,407	\$3,194	\$6,998	\$2,084	\$1,149	\$469			\$57,661
Brandes Investment Partners	United States																					\$133			\$133
Brookfield Corporation	Canada		\$74																						\$74
Brown Advisory	United States							\$101																	\$101
Calamos Investments	United States							\$32												\$17					\$49
California Public Employees' Retirement System (CalPERS)	United States										\$33	\$10	\$30	\$27											\$99
Canada Pension Plan Investment Board	Canada	\$682																							\$682
Canara Bank	India				\$49																				\$49
Capital Group	United States	\$10,353	\$94	\$5,933		\$8,040			\$1,819	\$1,291		\$578	\$2,865		\$623	\$1,820	\$4,443	\$3,117	\$20,466	\$11,708		\$652			\$73,803
Cartenna Capital	United States							\$51																	\$51
Causeway Capital Holdings	United States																	\$1,958							\$1,958
Charles Schwab	United States					\$573		\$71	\$413	\$799	\$93	\$104	\$289	\$174		\$3,179			\$1,015		\$145				\$6,856
Children's Investment Fund Management	United Kingdom																			\$4,306					\$4,306
China Chengtong	China						\$55																		\$55
China Development Bank	China						\$139																		\$139
China Southern Asset Management (CSAM)	China						\$24																		\$24

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BHARAT DYNAMICS	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	WALCHANDNAGAR INDUSTRIES	GRAND TOTAL	
Canara Bank	India				\$49																			\$49	
Capital Group	United States	\$10,353	\$94	\$5,933		\$8,040			\$1,819	\$1,291		\$578	\$2,865		\$623	\$1,820	\$4,443	\$3,117	\$20,466	\$11,708			\$652		\$73,803
Cartenna Capital	United States							\$51																	\$51
Causeway Capital Holdings	United States																	\$1,958							\$1,958
Charles Schwab	United States					\$573		\$71	\$413	\$799	\$93	\$104	\$289	\$174		\$3,179			\$1,015		\$145				\$6,856
Children's Investment Fund Management	United Kingdom																			\$4,306					\$4,306
China Chengtong	China						\$55																		\$55
China Development Bank	China						\$139																		\$139
China Southern Asset Management (CSAM)	China						\$24																		\$24
CI Financial	Canada											\$151													\$151
Cincinnati Financial	United States							\$15																	\$15
Citadel	United States							\$50						\$160											\$209
Crédit Agricole	France	\$1,930																			\$649				\$2,579
Deka Group	Germany	\$674																							\$674
Deutsche Bank	Germany													\$149											\$149
Diamond Hill Investment Group	United States												\$334												\$334
Dimensional Fund Advisors	United States		\$46		\$16			\$111	\$431		\$124	\$169	\$316	\$249	\$197							\$241			\$1,899
Dodge & Cox	United States																		\$4,446						\$4,446
Driehaus Capital Holdings	United States		\$23																						\$23
Envestnet	United States												\$222												\$222
Equitable Holdings	United States							\$149				\$10													\$159
Exor	Netherlands																	\$348							\$348
Fidelity International	Bermuda		\$155									\$102						\$407							\$664
Fidelity Investments	United States	\$1,139	\$28	\$2,533	\$4,352		\$645	\$1,325		\$821		\$392	\$197	\$97	\$1,160	\$993	\$643		\$1,620	\$165	\$180				\$16,288
First Eagle Investments	United States			\$802																					\$802
First Trust Advisors	United States										\$67			\$254								\$214			\$535
Fisher Investments	United States					\$835													\$1,769						\$2,604
Focus Financial Partners	United States											\$141													\$141
Franklin Resources	United States		\$78			\$390		\$50	\$512	\$1,742			\$493	\$20		\$1,041	\$659		\$2,157		\$119	\$363			\$7,624
Fullgoal Fund Management	China						\$28																		\$28
Gabelli Funds	United States																				\$214				\$214
Geode Capital Holdings	United States			\$294		\$2,075		\$172	\$1,427	\$2,950	\$250	\$429	\$1,050	\$485		\$2,216	\$1,301	\$326	\$2,686	\$498	\$386				\$16,545
Goldman Sachs	United States		\$23							\$677			\$231												\$931
Government Pension Fund Global (GPF)	Norway		\$36						\$712				\$315	\$198	\$91			\$769	\$264				\$345		\$2,732
Government Pension Investment Fund (GPIF)	Japan			\$303		\$607				\$819		\$105				\$679	\$378								\$2,892
GQG Partners	United States	\$852																\$589				\$333			\$1,774
Greenhouse Funds	United States							\$109																	\$109
Groupe BPCE	France		\$24			\$2,699						\$23		\$28	\$35			\$2,454			\$54	\$243			\$5,561
Guggenheim Partners	United States												\$20												\$20
HDFC Bank	India				\$257																				\$257
Hood River Capital Management	United States							\$48																	\$48
Hotchkis & Wiley Capital Management	United States							\$176																	\$176

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BHARAT DYNAMICS	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	WALCHANDNAGAR INDUSTRIES	GRAND TOTAL	
HSBC	United Kingdom				\$29						\$66													\$95	
Huashang Fund Management	China						\$17																		\$17
Hubei Juyuan Technology Investment	China						\$49																		\$49
Huihua Fund Management	China						\$114																		\$114
ICICI Bank	India				\$54																				\$54
Invesco	United States	\$752	\$126	\$2,360	\$29					\$3,370	\$416	\$280	\$292	\$220	\$158	\$678		\$342						\$569	\$9,591
Jackson Financial	United States											\$15													\$33
Janus Henderson	United Kingdom									\$793		\$445													\$1,238
JPMorgan Chase	United States							\$1,298	\$2,512			\$66	\$370				\$1,606		\$1,301		\$389				\$7,540
Jupiter Fund Management	United Kingdom		\$108																						\$108
Knights of Columbus	United States							\$10																	\$10
Kotak Mahindra Bank	India				\$106																				\$106
Lazard	Bermuda																							\$50	\$50
Legal & General	United Kingdom		\$65	\$489		\$625		\$429	\$1,049	\$59	\$113	\$265	\$135			\$474	\$603	\$861			\$121				\$5,287
Life Insurance Corporation of India	India				\$128																				\$128
Lone Pine Capital	United States																\$359								\$359
Lord, Abbett & Co	United States							\$23		\$44	\$109														\$176
LSV Asset Management	United States									\$146											\$336				\$483
Luther King Capital Management	United States							\$46																	\$46
M&G	United Kingdom			\$310																					\$310
Macquarie Group	Australia											\$288	\$19												\$307
Mahima Stocks	India																						\$3		\$3
Manulife Financial	Canada										\$111														\$111
Marathon-London	United Kingdom																\$339								\$339
Mariner Wealth Advisors	United States												\$105								\$87				\$192
MassMutual Holdings	United States	\$60											\$55												\$114
Masters Capital Management	United States							\$43																	\$43
Mawer Investment Management	Canada			\$270																			\$227		\$497
MetLife	United States										\$18														\$18
Millennium Management	United States							\$167					\$165												\$333
Minnesota Mutual Companies	United States										\$10														\$10
Mirae Asset Financial Group	South Korea											\$115													\$115
Modern Woodmen of America	United States							\$10																	\$10
Morgan Stanley	United States					\$623		\$107	\$3,333	\$182	\$96	\$686				\$1,547	\$1,546	\$32	\$2,504		\$124				\$10,780
Motilal Oswal	India				\$39																				\$39
National Pension Service	South Korea											\$258				\$644									\$902
National Western Life Group	United States																				\$19				\$19
Nationwide Mutual Insurance	United States										\$112														\$112
Neuberger Berman	United States										\$162														\$162
New China Asset Management	China						\$80																		\$80
New York Life Insurance	United States										\$12	\$15						\$28							\$54
Newport Group	United States					\$5,759		\$4,486	\$3,348																\$13,593

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BHARAT DYNAMICS	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	WALCHANDNAGAR INDUSTRIES	GRAND TOTAL
Ninety One	South Africa											\$220												\$220
Nippon Life Insurance	Japan				\$31																			\$31
Northern Trust	United States					\$584		\$67		\$855	\$58	\$97	\$238	\$122								\$95		\$2,116
Northwestern Mutual	United States																\$113							\$113
Olayan Financing Company	Saudi Arabia									\$683														\$683
Ontario Teachers' Pension Plan	Canada																			\$506				\$506
Orbis Group	Bermuda			\$555														\$423						\$978
Orix Corporation	Japan								\$426			\$548		\$582								\$603		\$2,158
Penghua Fund Management	China						\$32																	\$32
Perpetual	Australia										\$110	\$465												\$575
Point72	United States							\$54																\$54
Polaris Capital Management	United States		\$51																					\$51
Power Corporation of Canada	Canada													\$114								\$48		\$162
Primecap Management	United States	\$825										\$780										\$456		\$2,061
Principal Financial Group	United States			\$311																				\$311
Prudential Financial (US)	United States			\$131		\$1,110			\$62			\$24		\$73										\$1,401
PSG Konsult	South Africa		\$29																					\$29
Raven's Wing Asset Management	United States								\$8,152															\$8,152
Royal Bank of Canada	Canada								\$627	\$690										\$503				\$1,819
Royal London Group	United Kingdom																	\$58						\$58
Ruane, Cunniff & Goldfarb	United States											\$360						\$419						\$779
Rubic Capital Management	United States							\$140																\$140
Sanders Capital	United States								\$1,198								\$995		\$1,094					\$3,287
Santa Comba	Spain		\$99																					\$99
Schroders	United Kingdom		\$45																					\$45
SEI	United States										\$89													\$89
Silchester International Investors	United Kingdom		\$120	\$1,429																				\$1,549
SMBC Group	Japan														\$7									\$7
Smith Capital Investors	United States											\$9												\$9
Sociedad Estatal de Participaciones Industriales	Spain	\$4,463																						\$4,463
Sound Shore Management	United States										\$85													\$85
Southern Farm Bureau Life Insurance	United States											\$11												\$11
State Farm	United States							\$23		\$165														\$188
State Street	United States			\$459		\$4,940		\$265	\$2,902	\$6,606	\$754	\$1,023	\$1,954	\$838		\$16,818	\$6,113	\$452	\$11,569		\$757			\$55,449
Sun Life Financial	Canada		\$66			\$1,366			\$2,171	\$2,639		\$235	\$315	\$304		\$1,327	\$1,928	\$1,552				\$215		\$12,118
T. Rowe Price	United States					\$1,318			\$1,209	\$2,030	\$208		\$2,092		\$113			\$472	\$845		\$1,406			\$9,693
The Hartford	United States													\$44							\$56			\$100
Third Point	United States											\$244												\$244
Thrivent Financial	United States							\$105																\$105
TIAA	United States	\$625				\$1,196		\$47		\$1,434	\$52		\$78			\$155					\$62			\$3,649
Toronto-Dominion Bank	Canada										\$76										\$93			\$169
Truffle Asset Management	South Africa		\$24																					\$24

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BHARAT DYNAMICS	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	WALCHANDNAGAR INDUSTRIES	GRAND TOTAL	
Two Sigma Investments	United States																\$375							\$375	
UBS	Switzerland									\$809						\$799			\$885						\$2,493
Van Eck Associates Corporation	United States		\$19					\$31			\$225														\$275
Vanguard	United States	\$2,628	\$70	\$1,752	\$72	\$9,633		\$754	\$6,397	\$12,947	\$1,339	\$1,975	\$5,171	\$2,295	\$286	\$9,970	\$5,435	\$1,672	\$11,583	\$2,190	\$1,886	\$461			\$78,516
Victory Capital	United States							\$55						\$470								\$527			\$1,051
WCM Investment Management	United States			\$1,259																\$799					\$2,058
Wealth Enhancement	United States										\$57														\$57
Wellesley Asset Management	United States							\$10																	\$10
Wellington Management	United States	\$636	\$86	\$482		\$822		\$646	\$4,090	\$3,513			\$1,103	\$172		\$1,324	\$1,798	\$25	\$1,305						\$16,002
Wells Fargo	United States								\$1,799				\$1,178			\$1,151									\$4,128
Westchester	United States										\$157														\$157
White Mountains Insurance	Bermuda	\$48		\$53																					\$101
White Oak Capital Management	India				\$20																				\$20
Wintrust Financial Corporation	United States																					\$88			\$88
GRAND TOTAL		\$30,510	\$2,026	\$26,026	\$896	\$54,671	\$539	\$5,621	\$48,906	\$67,800	\$7,202	\$10,451	\$25,653	\$10,010	\$1,782	\$50,488	\$33,631	\$21,773	\$75,304	\$26,068	\$10,515	\$3,702	\$3	\$513,576	

TABLE 42: TOTAL SHARE-AND BONDHOLDING ALL FIGURES IN USD MILLIONS.

Total loans and underwriting

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BECHTEL	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	PERATON	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	GRAND TOTAL	
Academy Securities	United States					\$146				\$185		\$3				\$19	\$41								\$393
Alter Domus	Luxembourg																	\$205							\$205
Amerivet Securities Inc	United States															\$7									\$7
ANZ	Australia	\$143	\$106		\$257	\$402			\$211	\$350						\$220	\$118						\$163		\$1,970
Arab Banking Corporation (Bank ABC)	Bahrain					\$58																			\$58
Banca Monte dei Paschi di Siena	Italy														\$88										\$88
Banca Passadore & C,	Italy														\$88										\$88
Banca Popolare di Sondrio	Italy														\$108										\$108
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	\$498				\$443			\$211	\$1,063		\$134			\$88				\$62				\$408		\$2,906
Banco BPM	Italy														\$300										\$300
Bancroft Capital (PA)	United States															\$4				\$20					\$23
Bank of America	United States	\$424		\$4,281	\$775	\$2,098		\$746	\$963	\$2,373	\$407	\$1,107	\$2,210	\$687	\$211	\$1,967	\$704	\$396	\$115	\$4,197		\$248			\$23,909
Bank of China	China	\$424				\$342				\$350		\$132			\$88				\$115			\$43			\$1,494
Bank of New York Mellon	United States					\$58			\$54							\$522	\$166			\$381		\$64			\$1,244
Barclays	United Kingdom	\$498	\$106	\$218		\$915				\$799		\$211	\$257		\$118	\$998		\$1,217	\$181	\$647			\$275		\$6,439
BayernLB	Germany	\$321				\$58				\$56									\$230						\$665
Blaylock Beal Van	United States															\$11	\$8			\$17					\$36
BMO Financial Group	Canada							\$149				\$178	\$44	\$355				\$18		\$181					\$926
BNP Paribas	France	\$498	\$106	\$218	\$775	\$1,866		\$746		\$1,366		\$1,323			\$362		\$506		\$1,710	\$1,480			\$444		\$11,400
BPER Banca	Italy														\$229										\$229
Cabrera Capital	United States															\$4									\$4
Caisse des Dépôts et Consignations	France	\$143																							\$143
Capital One Financial	United States								\$54		\$174			\$318				\$125							\$671
CastleOak Securities	United States															\$19	\$13			\$37					\$68
Cathay General Bancorp	United States												\$97												\$97
China Merchants Bank	China						\$1,366																		\$1,366
CIBC	Canada				\$257					\$350															\$607
CITIC	China						\$576																		\$576
Citigroup	United States	\$640		\$4,281	\$750	\$4,702		\$746	\$54	\$1,968			\$596	\$373	\$184	\$2,023	\$600		\$621	\$5,058		\$248	\$275		\$23,119
Citizens Financial Group	United States											\$286						\$125							\$411
CL King & Associates	United States																			\$17					\$17
Comerica	United States							\$299			\$174	\$134													\$608
Commerzbank	Germany	\$321		\$218		\$875									\$141				\$287				\$408		\$2,250
Crédit Agricole	France	\$640		\$218	\$750	\$1,085				\$662					\$409	\$1,787			\$621	\$497	\$526		\$695		\$7,889
Crédit Mutuel	France	\$321		\$218	\$257				\$54						\$88	\$50							\$332		\$1,319
CSC Financial	China						\$303																		\$303
Danske Bank	Denmark									\$350															\$350
DBS	Singapore	\$321				\$641				\$619									\$115	\$778					\$2,475

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BECHTEL	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	PERATON	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	GRAND TOTAL	
Deutsche Bank	Germany	\$498		\$218		\$1,906				\$2,259			\$208		\$88				\$385	\$1,627			\$520	\$7,707	
Drexel Hamilton	United States															\$8	\$21							\$28	
DZ Bank	Germany	\$321																						\$321	
European Investment Bank	Luxembourg	\$947													\$262				\$430		\$598			\$2,237	
Export-Import Bank of the United States	United States																					\$175		\$175	
Fifth Third Bancorp	United States							\$149	\$54		\$174		\$97	\$210	\$38	\$313		\$125						\$1,158	
First Abu Dhabi Bank	United Arab Emirates			\$811		\$309			\$211				\$175				\$118							\$1,624	
First Citizens Bank	United States												\$19											\$19	
First Horizon	United States										\$246													\$246	
FNB Corporation	United States												\$80											\$80	
Fuyo General Lease	Japan								\$54															\$54	
Goldman Sachs	United States	\$321		\$218		\$1,550		\$74	\$54	\$2,150				\$210	\$30	\$1,399	\$455	\$850	\$244	\$4,443		\$293		\$12,290	
Great Pacific Securities	United States															\$4								\$4	
Groupe BPCE	France	\$498													\$116				\$115		\$526		\$352	\$1,607	
Hancock Whitney	United States										\$246													\$246	
HSBC	United Kingdom	\$498	\$106		\$257					\$722		\$423	\$257		\$88				\$726				\$332	\$3,408	
Huntington Bancshares	United States											\$134												\$134	
ICICI Bank	India					\$161																		\$161	
Industrial and Commercial Bank of China	China	\$424				\$191				\$722		\$313												\$1,650	
ING Group	Netherlands	\$321																						\$321	
Intesa Sanpaolo	Italy				\$167	\$161				\$56					\$386				\$115					\$885	
Investment Corporation of Dubai	United Arab Emirates																		\$115					\$115	
Jefferies Financial Group	United States																	\$18						\$18	
JPMorgan Chase	United States	\$498	\$106	\$218	\$424	\$2,836			\$477	\$2,532	\$407	\$344	\$2,067	\$318	\$152	\$2,113	\$1,110	\$1,561	\$451	\$3,820		\$323	\$408	\$20,163	
KfW	Germany	\$178																						\$178	
KKR Group	United States										\$249							\$1,840						\$2,089	
La Banque Postale	France	\$143																						\$143	
Lloyds Banking Group	United Kingdom	\$424	\$106	\$218		\$548			\$265							\$427		\$52	\$451					\$2,490	
Loop Capital	United States					\$146																\$6		\$152	
M&F Bancorp	United States													\$80										\$80	
Macquarie Group	Australia																	\$1,290						\$1,290	
Mediobanca Banca di Credito Finanziario	Italy														\$88									\$88	
MFR	United States															\$15								\$35	
Mischler Financial Group	United States															\$15	\$21							\$72	
Mitsubishi UFJ Financial	Japan	\$394		\$2,513	\$499	\$1,043		\$374	\$447	\$835	\$323	\$194	\$222	\$373	\$205	\$275	\$118	\$254	\$181	\$32	\$526	\$284		\$9,092	
Mizuho Financial	Japan	\$498				\$1,906			\$477	\$1,838	\$407		\$1,931	\$273		\$1,943	\$969	\$272	\$385	\$497				\$11,394	
Morgan Stanley	United States	\$711		\$218		\$1,550				\$1,305		\$444	\$379		\$30	\$1,408	\$455			\$3,729				\$10,228	
National Australia Bank	Australia			\$218		\$146										\$112	\$48							\$555	
NatWest	United Kingdom	\$394	\$712	\$218						\$722		\$254			\$88				\$115						\$2,503
Northern Trust	United States			\$811		\$412			\$211	\$619		\$191	\$257			\$50						\$163		\$2,713	
Northwestern Mutual	United States																	\$616						\$616	
Penserra Capital Management	United States															\$15								\$15	

INSTITUTION	COUNTRY	AIRBUS	BABCOCK INTERNATIONAL	BAE SYSTEMS	BECHTEL	BOEING	CHINA AEROSPACE SCIENCE AND TECHNOLOGY (CASC)	FLUOR CORP	GENERAL DYNAMICS	HONEYWELL	HUNTINGTON INGALLS INDUSTRIES	JACOBS SOLUTIONS	L3HARRIS TECHNOLOGIES	LEIDOS	LEONARDO	LOCKHEED MARTIN	NORTHROP GRUMMAN	PERATON	ROLLS-ROYCE	RTX CORP	SAFRAN	TEXTRON	THALES	GRAND TOTAL	
PJT Partners	United States					\$146																		\$146	
PNC Financial Services	United States				\$167				\$265		\$174	\$437		\$505	\$38	\$377		\$125				\$379			\$2,467
R. Seelaus & Co	United States															\$12				\$37					\$48
Regions Financial	United States							\$149	\$54			\$134		\$210	\$38			\$125							\$709
Riyad Bank	Saudi Arabia					\$266										\$533				\$629					\$1,427
Royal Bank of Canada	Canada	\$498		\$218		\$1,846		\$50	\$394	\$722		\$151	\$83	\$107		\$522		\$1,269	\$178	\$497					\$6,533
Santander	Spain	\$640	\$106	\$218		\$917				\$1,063					\$88			\$125	\$513		\$526		\$332		\$4,527
SAR Holdings	United States															\$11	\$21			\$37					\$68
Scotiabank	Canada								\$337	\$662	\$407	\$423	\$1,451	\$445				\$166	\$125		\$460				\$4,476
Shank Williams Cisneros & Co	United States					\$146										\$8	\$21			\$44		\$6			\$224
Skandinaviska Enskilda Banken	Sweden	\$424		\$218															\$451						\$1,094
SMBC Group	Japan	\$498	\$106	\$218	\$499	\$1,906		\$124	\$265	\$1,843			\$2,013	\$280	\$212	\$1,084	\$386	\$52	\$181	\$497		\$121	\$163		\$10,446
Société Générale	France	\$498		\$218	\$167	\$878				\$1,063					\$187				\$451				\$332		\$3,793
Standard Bank	South Africa							\$74																	\$74
Standard Chartered	United Kingdom	\$143				\$624		\$124		\$722									\$513				\$163		\$2,289
State Bank of India	India					\$402								\$120						\$200					\$722
State Street	United States	\$143				\$174										\$50	\$118								\$485
State Street Capital	United States	\$143																							\$143
Sun Life Financial	Canada																	\$482							\$482
Toronto-Dominion Bank	Canada	\$321		\$218					\$211	\$1,063	\$174	\$617	\$1,931	\$210		\$638	\$386	\$125	\$181						\$6,073
Truist Financial	United States					\$133			\$54		\$174	\$237	\$97												\$695
UBS	Switzerland	\$321				\$441					\$360				\$30		\$369	\$1,111	\$550	\$32					\$3,212
UniCredit	Italy	\$498								\$1,505					\$413	\$638	\$433		\$181	\$497			\$408		\$4,572
Unity National Bank	United States													\$80											\$80
US Bancorp	United States					\$622		\$124	\$265	\$1,063	\$407	\$396	\$1,312	\$318	\$40	\$638	\$299	\$125		\$32		\$232			\$5,871
Veritas Capital Fund Management	United States										\$111							\$274							\$385
Wells Fargo	United States	\$143		\$218		\$2,098		\$746	\$824	\$2,261	\$407	\$1,366	\$1,287	\$253	\$38	\$1,567	\$1,747	\$125		\$1,497		\$116			\$14,690
Westpac	Australia	\$143				\$861				\$56															\$1,060
Zions Bancorporation	United States												\$19												\$19
GRAND TOTAL		\$16,667	\$1,561	\$16,841	\$6,000	\$38,010	\$2,245	\$4,675	\$6,516	\$36,271	\$5,019	\$9,570	\$17,005	\$5,805	\$5,148	\$21,800	\$9,414	\$13,025	\$10,974	\$32,000	\$2,702	\$2,700	\$6,009	\$269,958	

TABLE 43: TOTAL LOANS AND UNDERWRITING ALL FIGURES IN USD MILLIONS.

Conclusion

This year will mark 80 years since the unimaginable suffering and devastation caused by the U.S. atomic bombings of Hiroshima and Nagasaki. 2024 Nobel Peace Prize laureates Nihon Hidankyo and other survivors of these atrocities have been crucial in driving global opposition to these inhumane weapons, culminating into the adoption of the Treaty on the Prohibition of Nuclear Weapons (TPNW) in 2017. The TPNW entered into force in January 2021.

The continued and deepening reliance on nuclear weapons as a legitimate security doctrine of a few dozen governments presents a major impediment to ensuring the horrors of Hiroshima and Nagasaki will never be repeated. Massive expenditures on nuclear weapons and billion dollar contract awards bring profit to the companies contracted to build them but present a major threat to humanity.

As central players in the world's economy, financial actors have a unique ability to address these risks and exert influence over corporate behaviour. By actively rejecting weapons of mass destruction, financial institutions can play a vital role in strengthening efforts towards a world free of the nuclear threat.

Annex: major nuclear weapon systems

Most nuclear armed countries have several major nuclear weapons systems in place. The United Kingdom is an exception, as it uses the same Trident missile delivery system as the United States, and only intends to fire these missiles from submarines. Other states have air-launched or ground-launched systems as well. Some ground-launched systems, including some Chinese systems, are designed to also be mobile.

The following is a snapshot of the various nuclear weapon systems, and the companies involved. Only those systems for which a clear connection to one or more of the 24 profiled companies was found, are included in this list. Additional information can be found in the full report.

Agni series (India)

India has a series of differently ranged mobile, land based Agni nuclear-capable ballistic missiles in its arsenal. The Agni I became operational in 2007 and has a range of 700+ km.⁴⁷³ The medium-range Agni II (2000+ km) and the intermediate range Agni III (3200+ km) also appear to be operational.⁴⁷⁴ India's Strategic Forces Command has additionally been conducting test flights of the Agni-P (1000+ km), the Agni IV (3500+ km) and the Agni V (5000+ km).⁴⁷⁵ India is also rumoured to have begun developing an Agni VI intercontinental ballistic missile (ICBM).⁴⁷⁶ Bharat Dynamics Limited is involved in the Agni missile programme.⁴⁷⁷ Walchandnagar Industries produces the launch systems for the Agni series.⁴⁷⁸

Prithvi II (India)

The Prithvi-II is a short range (350 km) dual-capable ballistic missile used as a nuclear delivery vehicle in the Indian nuclear arsenal.⁴⁷⁹ Bharat Dynamics Limited manufactured the Prithvi missile.⁴⁸⁰

ASMPA (France)

The ASMPA is a medium-range air-to ground nuclear armed missile that has been operational since 2009.⁴⁸¹ In 2016, MBDA France commenced work on design and development of the mid-life upgrade of the ASMPA, the ASMPA-R, to extend life through 2030.⁴⁸² MBDA is a joint venture between BAE Systems (37.5%), Airbus (37.5%) and Leonardo (25%).⁴⁸³ Thales SIX is listed by the French Ministry of Defence as one of MBDA's six subcontractors in the ASMPA mid-life upgrade.⁴⁸⁴ Until December 2024, a Safran subsidiary, Safran Ceramics, was part of a joint venture with MBDA, called Roxel⁴⁸⁵, which is involved in ASMP/ ASMP-A missile production, providing boosters and additional devices.⁴⁸⁶

ASN4G (France)

MBDA ((a joint venture between BAE Systems (37.5%), Airbus (37.5%) and Leonardo (25%)) is also contracted by the French government for airborne component work related to development of the ASMPA-successor ASN4G.⁴⁸⁷ The new weapon is scheduled to enter service in 2035 with range exceeding 1,000km, double that of the ASMPA,⁴⁸⁸ and will incorporate new hypersonic technologies.⁴⁸⁹

M51 (France)

The M51 is a submarine launched ballistic missile, currently available in two versions: the M51.1 and M51.2.⁴⁹⁰ The French Ministry of Defence states that preliminary work on the third version began in 2014, and the French Ministry of Defence 2024 budget states that the M51.3 entered production in 2019.⁴⁹¹ Preparatory work for a fourth version, the M51.4, commenced in 2022.⁴⁹² The M51.3 version is due to enter service around 2025.⁴⁹³ According to the French 2025 Defence budget, 2025 funding is mainly reserved for the continuation of the development and production work of M51.3, as well as to start production of the M51.4, with ArianeGroup, a joint venture between Airbus and Safran, as the prime contractor.⁴⁹⁴ Naval Group, of which Thales has 35% shareholding, is listed as the main contractor for the M51 missile adaptation for the French nuclear armed submarines.⁴⁹⁵

B61 (United States)

The B61 is a nuclear gravity bomb that can be dropped from airplanes and is currently deployed at U.S. and NATO bases.⁴⁹⁶ There are an estimated 100 B61 bombs stationed in five European countries

(Kleine Brogel AB in Belgium, Büchel AB in Germany, Aviano AB and Ghedi AB in Italy, Volkel AB in the Netherlands, and Incirlik AB in Turkey).⁴⁹⁷ The B61-12 will consolidate and replace earlier B61 weapon designs.⁴⁹⁸ Full-scale production thereof started in 2022 and is expected to continue through 2025.⁴⁹⁹ There is currently no publicly available information that specifies the exact time period for the B61-12 delivery to Europe. On 16 January 2025, however, National Nuclear Security Administration (NNSA) Administrator Jill Hruby said the new B61-12 gravity bombs “are fully forward deployed”⁵⁰⁰, which appears to confirm that deployment to Europe has already started. In addition, according to experts, United Kingdom airbase Lakenheath will reportedly again become a storage location for U.S. nuclear bombs.⁵⁰¹ Boeing produces the guided tail-kit assembly of the B61-12.⁵⁰² Most of the U.S. nuclear complex is involved in producing the weapons. Design and engineering take place at the Los Alamos and Sandia national laboratories.⁵⁰³ The first production unit was completed at Pantex.⁵⁰⁴ The Y-12 complex is where uranium (and other) components are manufactured⁵⁰⁵, and the firing, safing and use control components are produced at the Kansas City National Security Campus.⁵⁰⁶ Honeywell International operates the Kansas City and Sandia facilities.⁵⁰⁷ Los Alamos is managed and operated by Triad National Security, made up of Battelle Memorial Institute, the Texas A&M University System and the University of California.⁵⁰⁸ Among its subcontractors are Fluor and Huntington Ingalls Industries (HII).⁵⁰⁹ In October 2023, the U.S. Department of defense announced its plans to build a new B61 nuclear gravity bomb, which will be known as the B61-13.⁵¹⁰ It will be designed for delivery by the future B-21 strategic bomber, and, until it is retired, possibly also the B-2.⁵¹¹ The Los Alamos National Laboratory will oversee its design, development, testing, and eventual certification.⁵¹² Completion is scheduled for the spring of 2026.⁵¹³

Minuteman III (United States)

There are 400 Minuteman III Intercontinental Ballistic Missiles (ICBMs) currently deployed in the U.S. arsenal, and they are expected to stay active until 2030.⁵¹⁴ These missiles can carry the W78 and W87 warheads.⁵¹⁵ BAE Systems is the prime contractor for the ICBM system integration support.⁵¹⁶ Northrop Grumman is the prime contractor for sustaining Minuteman propulsion and ground subsystems support.⁵¹⁷ L3 Harris subsidiary,

Aerojet Rocketdyne, was the original equipment manufacturer for solid rocket motors (SRM) and the post-boost propulsion system for the Minuteman.⁵¹⁸ Boeing has several outstanding contracts for work on the Minuteman system, including for engineering and repair services for the Minuteman guidance (sub)system⁵¹⁹ and the delivery of Flight Test Telemetry Termination (FT3) Systems.⁵²⁰ Honeywell is the original equipment manufacturer of the internal guidance instruments.⁵²¹ Textron builds the multiprobe antenna and Mod5F mid-sections for the missiles.⁵²² Lockheed Martin builds the re-entry systems.⁵²³ Peraton performed software analysis and testing for the Minuteman System⁵²⁴ and has an outstanding contract for nuclear safety analysis⁵²⁵.

LGM-35A Sentinel (United States)

The LGM-35A Sentinel, the new U.S. intercontinental ballistic missile will replace the Minuteman III. The Sentinel prime contractor is Northrop Grumman.⁵²⁶ The U.S. Air Force will also replace the current warheads with the new W87-1 variant and is planning to produce new plutonium pits for these warheads at the Los Alamos National Laboratory and Savannah River Site.⁵²⁷ While the Sentinel programme was initially estimated to cost \$95.3 billion, its estimated costs have rose dramatically to \$140.9 billion, an 81% increase, resulting in a severe breach of the Nunn-McCurdy act.⁵²⁸ The Pentagon nevertheless agreed to proceed with the Sentinel program.⁵²⁹ The Sentinel had been original scheduled to become operational by September 2030, but will be delayed at least three years.⁵³⁰ The Northrop Grumman Sentinel nationwide team includes L3Harris subsidiary, Aerojet Rocketdyne, which expanded its Advanced Manufacturing Facility (AMF) in Huntsville, Alabama to produce solid rocket motors for these weapons.⁵³¹ Aerojet Rocketdyne is developing the large solid rocket motor and the post-boost propulsion system.⁵³² Bechtel will design and construct the launch infrastructure component.⁵³³ General Dynamics is working on command and launch capabilities.⁵³⁴ Honeywell International will develop guidance and missile electronics.⁵³⁵ Lockheed Martin is handling missile payload integration.⁵³⁶ Collins Aerospace, a RTX unit, will also build components for command and control systems.⁵³⁷ Textron will develop missile payload integrations.⁵³⁸

AGM-86 Air-Launched Cruise Missile (United States)

The Air-Launched Cruise Missile (ALCM) is a long-range missile that is part of the U.S. strategic bomber

force.⁵³⁹ The B-52 airplane is able to carry up to 20 200 kT missiles.⁵⁴⁰ The U.S. plans to keep the existing design in place until deploying its replacement, the Long Range Standoff (LRSO), around 2030.⁵⁴¹ Boeing builds these missiles.⁵⁴²

Long Range Standoff (United States)

The U.S. Air Force is planning on replacing the current stockpile of Air Launched Cruise Missiles with a new Long Range Standoff (LRSO) cruise missile.⁵⁴³ According to the U.S. Congressional Research Services, the U.S. Air Force plans to buy up to 1,087 LRSO missiles.⁵⁴⁴ The new missiles will be armed with the W80-4 warhead.⁵⁴⁵ Lawrence Livermore National Laboratory and Sandia National Laboratories are the primary facilities responsible for the new warhead design, and the new weapon is expected to be completed by 2027.⁵⁴⁶ Boeing is contracted to make sure the LRSO can be dropped by B-52H bombers.⁵⁴⁷ National Technology and Engineering Solutions of Sandia (NTESS), a wholly owned subsidiary of Honeywell operates Sandia National Laboratory, where the warheads will be integrated to the missiles⁵⁴⁸, with Peraton as a subcontractor.⁵⁴⁹ RTX was contracted in 2021 for development and manufacture of the LRSO.⁵⁵⁰ The LRSO will be carried by the B-52 but will also later arm the new B-21 Raider stealth bomber.⁵⁵¹

Warhead assembly, plutonium and tritium production (United States)

At Pantex and the Oak Ridge Y-12 facility U.S. nuclear weapons are assembled or disassembled.⁵⁵² Pantex stores thousands of plutonium pits, the heart of thermonuclear weapons, and is responsible for refurbishing existing warheads.⁵⁵³ The Y-12 site manufactures nuclear weapon components from uranium and lithium, and it is the only source for enriched uranium components for nuclear weapons.⁵⁵⁴ Until October 2024, both sites were managed and operated by Consolidated Nuclear Security (CNS), among others comprised of Bechtel, Leidos and Northrop Grumman subsidiary ATK Launch Systems.⁵⁵⁵ Now, PanTexas Deterrence, a joint venture that includes Fluor, holds the Pantex Plant management contract, while CNS continues to be responsible for the Y-12 Complex.⁵⁵⁶

The Savannah River Site is the only site in the U.S. nuclear weapon complex with capability to extract, recycle, purify and reload tritium, which must be

periodically replaced in nuclear weapons.⁵⁵⁷ Plutonium pit production capabilities are also being developed at the site.⁵⁵⁸ The site is operated by Savannah River Nuclear Solutions (SRNS), a joint venture between Fluor and HII subsidiary, Newport News Nuclear.⁵⁵⁹ Honeywell Federal Manufacturing & Technologies manages and operates the National Security Campus (NSC) (formerly Kansas City Plant), the National Nuclear Security Administration (NNSA) facility responsible for producing over 80% of the non-nuclear components for U.S. nuclear weapons.⁵⁶⁰

W78-1 and W80 warheads (United States)

The W78-1 warhead, which will be deployed on the Sentinel ICBM, and the W80 warhead, used on the Long Range Stand Off Missile, are the responsibility of the Lawrence Livermore National Laboratory and Sandia National Laboratories.⁵⁶¹ The Lawrence Livermore lab is operated by Lawrence Livermore National Security⁵⁶², which includes Bechtel.⁵⁶³ Sandia National Laboratories is operated by National Technology and Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International⁵⁶⁴, with Peraton as a subcontractor⁵⁶⁵.

W88 Alt 370 warheads (United States)

The W88 is the nuclear warhead deployed on the Trident II (D5) missiles.⁵⁶⁶ Los Alamos National Laboratory ((operated by Triad National Security, with Fluor and Huntington Ingalls Industries (HII) as subcontractors))⁵⁶⁷ and Sandia National Laboratory (operated by Honeywell, with Peraton as a subcontractor)⁵⁶⁸ are the design and engineering laboratories for the W88 Alt 370.⁵⁶⁹ The NNSA estimates that the costs for the W88 Alt 370 program will be around \$2.8 billion.⁵⁷⁰

Trident II (D5) (United States & United Kingdom)

The submarine-launched Trident II (D5) ballistic missile is currently aboard U.S. Ohio-class and British Vanguard-class submarines.⁵⁷¹ In 1963, the UK and US agreed to share procurement for key components for their nuclear missiles.⁵⁷² Each submarine can carry up to 20 Trident II D5 missiles, but the U.S. does not plan to deploy more than 240.⁵⁷³ Three warhead types are currently deployed on the Trident: the W76-1, the W76-2 and the W88.⁵⁷⁴ The U.S. is also planning to build a new warhead, the W93, to be deployed on the Trident missiles.⁵⁷⁵ The UK is parallelly engaged in a project for new nuclear warheads for their

arsenal.⁵⁷⁶The UK announcement to parliament came several days after the agreement to work closely with the U.S. in developing these weapons was published in major media outlets.⁵⁷⁷ L3Harris subsidiary, Aerojet Rocketdyne, manufactures Post Boost Control System Gas Generator Units for the Trident II D5 program.⁵⁷⁸ L3Harris is also responsible for flight test instrumentation and support.⁵⁷⁹ BAE Systems is contracted by the U.S. government for technical engineering services on the U.S. and UK Trident II D5 strategic weapon systems.⁵⁸⁰ General Dynamics supports Trident life extension.⁵⁸¹ Lockheed Martin developed and produced the missiles, and provides engineering and technical support.⁵⁸² Northrop Grumman produces propulsion systems for the Trident missiles.⁵⁸³

DF-26 (China)

The DF-26 is an intermediate-range, dual-capable, ballistic missile in China's nuclear arsenal.⁵⁸⁴ It has a range of approximately 4,000km, and is one of the most widely deployed in China.⁵⁸⁵ China Aerospace Science and Technology Corporation (CASC) is the manufacturer of the DF-26.⁵⁸⁶ China continues to expand its DF-26 missile force.⁵⁸⁷ The U.S. Pentagon also reports China may have already deployed a new long-range ballistic missile, the DF-27, which can carry either conventional or nuclear warheads.⁵⁸⁸

Submarines

The INS Arihant and INS Arighat (India)

The INS Arihant, India's first indigenous nuclear powered ballistic missile submarine (SSBN), completed its first "deterrence patrol" in 2018.⁵⁸⁹ Sources indicate that the Arihant will primarily serve as a training vessel and technology demonstrator.⁵⁹⁰ In October 2022, the Arihant was used for an unnamed submarine-launched ballistic missile test firing.⁵⁹¹ Walchandnagar Industries states it manufactured "critical core components" for the Arihant.⁵⁹² A second SSBN, the INS Arighat was launched in 2017 and commissioned into service in August 2024.⁵⁹³ India is also developing a next generation of SSBNs, the S5 class.⁵⁹⁴

Le Triomphant-class and SNLE-3G (France)

The French navy operates four Triomphant-class nuclear-powered ballistic missile sub-marines (SSBNs), expected to be operational until the 2030s:

Le Triomphant, Le Téméraire, Le Vigilant, and Le Terrible.⁵⁹⁵All four carry the M51 missile.⁵⁹⁶ In March 2024, Naval Group, in which Thales has a 35% stake, started construction of the new SNLE-3G submarine class, which will enter operational service around 2035.⁵⁹⁷

The Ohio and Columbia-class (United States)

The U.S. navy currently operates 14 Ohio-class nuclear armed submarines.⁵⁹⁸ Each can carry up to 20 Trident missiles.⁵⁹⁹ The new Columbia-class submarines are scheduled to begin replacing the Ohio-class in late 2020s.⁶⁰⁰ The U.S. navy plans to invest almost \$130 billion in the new Columbia-class program.⁶⁰¹ The Government Accountability Office, however, warned that lead submarine construction costs could exceed initial estimates by hundreds of millions of dollars.⁶⁰² General Dynamics is building the new Columbia-class submarines for the U.S. Navy.⁶⁰³ Leonardo provides electric propulsion components.⁶⁰⁴ BAE Systems is also contracted for work on the Columbia-class submarines⁶⁰⁵ Northrop Grumman performs shipyard field operations and other support for the Columbia program.⁶⁰⁶

The Vanguard and Dreadnought-class (United Kingdom)

The United Kingdom has a stockpile of approximately 225 nuclear warheads, up to 120 of which are available for deployment on four Vanguard-class nuclear armed submarines: HMS Vanguard, HMS Victorious, HMS Vengeance, and HMS Vigilant.⁶⁰⁷ The UK is the only nuclear armed state that operates a posture with a single deterrence system. BAE Systems is constructing the new Dreadnought-class submarines, which are expected to enter service in the early 2030s.⁶⁰⁸ The will be named HMS Dreadnought, HMS Valiant, HMS Warspite, and HMS King George VI.⁶⁰⁹ Rolls-Royce builds the nuclear propulsion systems.⁶¹⁰ Babcock International is also contracted for work on the Dreadnought submarines, and delivers through-life support and life extension of the Vanguard class submarines.⁶¹¹ General Dynamics delivers the fire control systems for the Dreadnought.⁶¹² Jacobs supplies research and technology services to the United Kingdom's naval nuclear propulsion program, including for the Vanguard submarine.⁶¹³ Northrop Grumman performs shipyard field operations and other support for the Dreadnought program.⁶¹⁴

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