



Commentary

**First Half 2020 Thoughts:
The Big Six**

1. Air traffic and cargo transportation will rebound at some point. It is hard to believe that it won't. Until vaccines are approved people may have to wear masks on planes, but even with our changed perceptions on safety, people want to travel. Changing from a global, increasingly connected world to one with restricted or closed borders is remotely possible but it remains a highly unlikely scenario. Likewise, Boeing will fly again. There are only two man-

ufacturers of large passenger and transport aircraft. Airbus had issues where people questioned its future years ago. This time it is Boeing. It'd be unrealistic at this point in time to declare that an eventual rebound by Boeing is impossible.

2. The Pentagon has been front loading contracts, accelerating approval of international sales. Billions of dollars of contracts have been let and the Pentagon and prime contractors have accelerated hundreds of millions in payments to supply chain partners in an

continued on page 3

**SPADE Defense Index
30 June 2020 Rebalance**

PAE Systems (NYSE: PAE)

PAE (Pacific Architects and Engineers) is a defense and government services contractor that has provided consulting, logistics, and professional services since 1955. In 2016, it was acquired by private equity. Earlier this year it went public via a blank check company. It has more than \$2 billion in annual revenues and more than 15,000 employees.

RADA Electronics (NASDAQ: RADA)

An Israeli defense electronics firm specializing in radar sensors, navigation systems, and data recording systems for airborne and land applications including tactical land radar, inertial navigation systems, and avionics.

Spirit Aerosystems (NYSE: SPR)

Spirit designs and builds fuselages, nacelles, and wing components for aircraft. Boeing and Airbus are its largest customers. In June 2020, DoD deemed them "systematically important" stating they were "critical to

domestic production capability for advanced tooling, composite fabrication, and metallic fabrication." DoD provided them with \$80M as part of this announcement (and to help offset issues associated with the temporary production declines for the 737-Max.) Spirit's defense business generated \$525M in 2018 and a company official indicated their intent to double this by mid-decade.

Howmet (NYSE: HWM)

Earlier in the decade Alcoa Aluminum acquired a number of specialty metals companies to enhance its "engineered products" for aerospace and defense clients. This included products for jet and rocket engines, titanium structures, castings, etc. It had a higher growth rate than the aluminum business but as it was a small part of Alcoa, it had limited impact on the valuation of the overall firm. In Nov 2016, the division was spun out as Arconic, but remained highly diversified. On 1 April 2020, the firm again split with Arconic focused on rolled aluminum products and Howmet Aerospace on engineered products. A&D makes up 65%+ of revenues.

SPADE Defense Index Statistics

6/30/20 Close	6483.41
3/31/20 Close	5835.30
12/31/19 Close	7969.83
12/31/18 Close	5754.86

All-time Intraday High:	
13 February 2020	8613.30

All-time Closing High:	
12 February 2020	8599.46

	SPADE Defense	S&P500
2Q20	11.11%	19.95%
1Q20	[26.78%]	[20.00%]
YTD 2020	[18.65%]	[4.04%]
2019	38.49%	28.88%

Corporate Actions Affecting the Index During the Quarter

Raytheon and United Technologies closed their merger on 3 April 2020.

Dividend

Invesco's Defense ETF issued a dividend of 11.2c on June 22.

Licensed Products

Exchange Traded Fund (ETF)

The SPADE Defense Index has been licensed to Invesco and serves as the underlying index for the Invesco Aerospace & Defense ETF (NYSE Arca: PPA).

Options Trading

Options on the Invesco Aerospace and Defense ETF (ticker: PPA) began trading on November 2019.

2Q20 Leaders

1	RADA Electronics	86.88%
2	MAXAR	68.16%
3	Raytheon Tech.	66.41%
4	Hexcel	51.37%
5	PAE Systems	47.30%
6	Ducommun	40.10%
7	AXON International	38.66%
8	Transdigm	38.06%
9	Triumph Group	34.28%
10	Heico	33.72%

2Q20 Laggards

1	L3 Harris	[5.82%]
2	Mantech	[5.75%]
3	Aerojet Rocketdyne	[5.24%]
4	Huntington Ingalls	[4.14%]
5	Curtiss Wright	[3.41%]
6	Spirit Aerosystems	0.08%
7	Northrop Grumman	1.78%
8	Leidos	2.10%
9	CACI	2.59%
10	Howmet	2.92%

Morningstar Says:

PPA is a Five-Star Fund *****
Below Avg Risk and High Return vs. the
Industrials Category

YTD Results

1	AXON International	33.91%	27	Mantech	[14.26%]
2	AeroVironment	28.98%	28	PAE Systems	[14.26%]
3	RADA Electronics	26.01%	29	General Dynamics	[15.25%]
4	MAXAR	14.61%	30	Honeywell	[18.31%]
5	Mercury Computer	13.82%	31	Transdigm	[21.06%]
6	Booz Allen	9.36%	32	FLIR Systems	[22.09%]
7	Ball Corp	7.45%	33	Hexcel	[23.31%]
8	Raytheon Tech.	5.31%	34	Oshkosh Truck	[24.33%]
9	Iridium	3.25%	35	Cubic Corp.	[24.45%]
10	Howmet	2.92%	36	OSI Systems	[25.91%]
11	Jacobs Engineering	[1.21%]	37	KBR	[26.07%]
12	Vectrus	[4.16%]	38	Textron	[26.21%]
13	Leidos	[4.31%]	39	FireEye	[26.32%]
14	Lockheed Martin	[6.28%]	40	Huntington Ingalls	[30.45%]
15	BWX Technologies	[8.76%]	41	Ducommun	[30.99%]
16	Teledyne Tech.	[10.27%]	42	Woodward	[34.52%]
17	Northrop Grumman	[10.62%]	43	Curtiss Wright	[36.63%]
18	SAIC	[10.73%]	44	Kaman	[36.89%]
19	Elbit Systems	[11.61%]	45	Moog	[37.91%]
20	Perspecta	[12.14%]	46	CAE	[38.81%]
21	Parsons	[12.21%]	47	Boeing	[43.73%]
22	Heico	[12.70%]	48	ViaSat	[47.57%]
23	Aerojet Rocketdyne	[13.18%]	49	Comtech	[52.41%]
24	Kratos Defense	[13.21%]	50	AAR Corp	[54.17%]
25	CACI	[13.24%]	51	Triumph Group	[64.35%]
26	L3 Harris	[14.25%]	52	Spirit Aerosystems	[67.12%]

**ETF Statistics (NYSE Arca: PPA)
Invesco Aerospace & Defense**

Exchange / Ticker Symbol:	NYSE / PPA
Assets (6/30/20)	\$696 M
Closing Price (6/30/20)	\$55.39
Dividend Yield*	2.10%
2Q20 Volume**	5,670,400
Turnover*	15%
Morningstar Rating	***** (5 Star)

source: * Morningstar & ** Yahoo Finance 7/1/20

Capture Ratio*	3-Yr	5-Yr	10-Yr
Upside	111	112	105
Downside	106	90	75

Portfolio Price / Earnings*	19.93
Portfolio Price / Book*	2.59
Portfolio Price / Sales*	1.26
Portfolio Price / Cash Flow*	11.82
Beta (3-year) *	1.16
Alpha (3-years)*	1.68
R-squared (3 years)*	74.41
Sharpe Ratio*	0.37
Long-Term Earnings*	8.56%
Historical Earnings*	14.38%
Sales Growth*	6.55%
Cash Flow Growth*	2.37%
Book Value Growth*	12.07%
Historical Sustainability Score (% Rank)	74

source: * Morningstar, FactSet 7/1/20

Commentary (continued from page 1)

effort to protect the U.S. defense industrial base during the coronavirus slowdown. Though some third-tier suppliers may have financial issues, and firms that generate a significant portion of their revenues from commercial aerospace activities clearly are suffering, overall, the defense industrial base appears solid. An investigation into a rumor that contracts were being cancelled, appears to be isolated rather than a pervasive problem.

3 Defense performance always rebounds. One can't predict the future, but historically over the past 30+ years, this has been a true statement. Research by SPADE Indexes shows that over this timeframe, at any 30-month period after factoring in dividends, an investor did not lose any money on his invested principal if they invested in a portfolio tracking the SPADE Defense Index. NEVER. This may not be true with other products as their weighting methodology excludes the non-manufacturers that drove performance in the 1990s and early 2000s. Likewise, products that equal weight the sector would likely experience wider variability over time due to the nature of the methodology.

4. Why A&D Underperformed in 1H20. Investors continue to take a wait-and-see approach to the aerospace and defense sector which (a) has outperformed the market by a wide margin in recent years, and (b) is being held back as Boeing and commercial aerospace firms are structurally limited until air travel and global commerce return to pre-pandemic levels and Boeing receives airworthiness approval for its 737-Max aircraft. Two primary factors are behind the decline. First, the rapid decline in the stock market earlier in the year, saw investors cash in their gains from the past several years. With Boeing's stock dropping more than 75% at its trough, people sold funds that held Boeing (one fund had nearly 25% of its \$6 billion in assets under management in Boeing). With outflows that are still between 40%-50% at quarter end, the selloff in ETF sector products contributed to a broad-based decline. The sharecount of Invesco's PPA was 24% below that of its peak. Second, the "Robinhood effect." People are at home and feeling a need to do something. Combined with the lack of sports and non-COVID news to divert their attention, and a greater number of people turned to the stock market. Besides the wild

gyrations in the stock prices of bankrupt companies like Hertz and JC Penney, the recent run up in the market is due to massive gains in a very select group of companies like Telsa, Apple, Amazon and a number of tech firms. Considering the outsized effect these firms have on indexes such as the NASDAQ 100 and S&P500 (Apple and Amazon are 22% of the NASDAQ 100 and nearly 10% of the S&P500), the broader market soars while the average stock is held back. The "K" shaped recovery that is happening distorts the market in the short-term but a reversion to the mean would likely benefit defense stocks.

continued on page 5

YTD chart comparing SPADE Defense Index (DXS) (black) with the S&P500 (gold)



2-Year performance comparing SPADE Defense Index (used by Invesco "PPA") (black) vs ishares/Dow Jones index (gold)



Presidential Election Year Performance (ex div)

Feb-Apr	Defense	S&P500	Alpha
2020	[23.51%]	[9.71%]	[1380 bps]
2016	8.29%	6.45%	184 bps
2012	3.61%	6.51%	[290 bps]
2008	1.78%	0.51%	127 bps
2004	[0.82%]	[2.16%]	134 bps
2000	10.52%	4.16%	636 bps

Aug - Oct	Defense	S&P500	Alpha
2020	TBD	TBD	TBD
2016	[0.25%]	[2.18%]	193 bps
2013	6.00%	2.38%	362 bps
2008	[24.34%]	[23.56%]	[78 bps]
2004	5.63%	2.59%	304 bps
2000	13.30%	[0.10%]	1334 bps

May - July	Defense	S&P500	Alpha
2020	TBD	TBD	TBD
2016	6.21%	5.24%	97 bps
2012	[4.62%]	[1.32%]	[330 bps]
2008	[10.48%]	[8.53%]	[195 bps]
2004	2.74%	[0.50%]	324 bps
2000	[6.03%]	[1.49%]	[454 bps]

Nov-Jan	Defense	S&P500	Alpha
2020/2021	TBD	TBD	TBD
2016/17	9.44%	7.18%	226 bps
2012/13	8.58%	6.08%	250 bps
2008/09	[4.00%]	[14.74%]	1074 bps
2004/05	5.08%	4.51%	57 bps
2000/01	[0.91%]	[4.43%]	352 bps

Three months after the elections
OUTPERFORM LAST FIVE ELECTIONS (5/5)

Three months leading up to election
OUTPERFORM IN FOUR OF FIVE (4/5)
 (only exception was <3% variation during a significant market decline)

May-July prior to the election
 Typically underperforms (3/5 likely 4/6)

Feb-April prior to the election
 Mixed. Outperform in 4/5 prior to 2020's significant decline

Post World War II President	Term in Office	Avg Annual Return
Bill Clinton	20 Jan 1993 - 20 Jan 2001	15.2%
Barack Obama	20 Jan 2009 - 20 Jan 2017	13.8%
Donald Trump	20 Jan 2017 - 4 July 2020*	12.6%
George HW Bush	20 Jan 1989 - 20 Jan 1993	11.0%
Dwight Eisenhower	20 Jan 1953 - 20 Jan 1961	10.9%
Gerald Ford	9 Aug 1974 - 20 Jan 1977	10.8%
Ronald Reagan	20 Jan 1981 - 20 Jan 1989	10.2%
Harry S. Truman	4 Apr 1945 - 20 Jan 1953	8.1%
Lyndon Johnson	22 Nov 1963 - 20 Jan 1969	7.7%
Jimmy Carter	20 Jan 1977 - 20 Jan 1981	6.9%
John F. Kennedy	20 Jan 1961 - 22 Nov 1963	6.5%
Richard Nixon	20 Jan 1969 - 9 Aug 1974	-3.9%
George W Bush	20 Jan 2001 - 20 Jan 2009	-5.6%

Observations

1. Presidents during the tech era have seen better stock market performance than their predecessors.
2. Political party in the White House seems to have little impact on stock market performance during their term in office.
3. Defense stocks outperformed consistency during the Barack Obama and George W. Bush administrations; yet underperformed during both Clinton and Trump.

* * *

Kiplinger Methodology: Compiled using S&P 500 price return data (ie. not including dividends which tends to favor more recent presidents). Over the past half-century, dividends have become a smaller portion of total returns due to their unfavorable tax treatment. Data is not adjusted for inflation. This will tend to reward presidents of inflationary times (Richard Nixon, Jimmy Carter, Gerald Ford, etc.) and punish presidents of disinflationary or deflationary times (FDR, George W. Bush, Barack Obama, etc.) Since 1950, average annual price gain for the S&P500 is ~8%.

Commentary (continued from page 3)

5. The World is Still a Dangerous Place. Though COVID has dominated the news in recent months, global hot spots and issues associated with North Korea, Iran, the Middle East, Turkey, and Russia remain. Likewise, smaller regional conflicts in Africa, Asia, and the Americas go unnoticed by most people. But what has military and policy analysts concerned is the increase in rhetoric between the U.S. and China. Competition for resources, Chinese agreements to support developing nations as the US pulls back from its international relationships, an increasingly competitive commercial technology landscape, restructuring the politics of Hong Kong, and “saber rattling” as ships in the China Sea engage in military training could easily escalate into a new Cold War.

6. Forthcoming US Presidential Elections. Historically, the performance of stocks in the defense sector has reacted more toward our perception of global safety than economic issues or political trends. When considering what affect the presumptive Democratic nominee Joe Biden would have on defense spending one needs to consider more than just political party. There will be a tradeoff between the positives (refunding our obligations to NATO and other international organizations that the Trump Administration has withdrawn from; meeting new threats that impact the security of the United States and its citizens) and the negatives (how much spending control will Congress and the White House exert on the Pentagon in order to get the budget in line after massive government spending increase in recent years to spur the economy in a COVID world?).

(Check out page 4 for historical data on how the stock market performed during every presidential administration as well as how the defense sector and the stock market performed during the presidential election cycle.)

A complete archive of *The SPADE Investor* including our commentaries and industry data can be found at—

www.spadeindex.com / defense

By the Numbers

- \$1.86T:** The US Government Accountability Office is tracking the budget growth of major defense acquisition programs.
- \$187B -** Amount Australia plans to spend to significantly upgrade its aircraft and weaponry options over the next decade.
- \$9.2B: Boeing** and Saab are partners on the T-7A Red Hawk, which completed a critical design review.
- \$6.07B - Lockheed Martin** from the Pentagon for production of Patriot Advanced Capability-3 Missile Segment Enhancement interceptors for US Army and int’l buyers.
- \$6B - Raytheon** from the Defense Logistics Agency for an up to \$6B modification for parts and repairs of the Patriot Missile System.
- \$4.25B - Boeing** from Morocco; 24 AH-64E Apache helicopters
- \$3.42B - General Dynamics** under a 6-year contract to engineer and build Hydra-0 rockets for the US Army
- \$3.3B - Ball Aerospace, Booz Allen, and Leidos** - Are among 18 recipients of Advanced Battle Management System contracts from the USAF. Each qualifies the company to receive up to \$950 million from the program.
- \$2.9B: Northrop/Ball** and **Raytheon** passed preliminary design reviews for the Next-Generation Overhead Infrared satellite sensors. **Lockheed Martin** is building 3 GEO satellites under a \$2.9B contract.
- \$2.86B:** Planned spending by DoD on hypersonic weapons in 2021 as the Navy and Army develop prototypes based on common booster design.

continued on page 6

PPA Dividend History

2012	\$0.444	YTD	\$0.400
2011	\$0.199	2019	\$0.651
2010	\$0.155	2018	\$0.444
2009	\$0.202	2017	\$0.363
2008	\$0.145	2016	\$0.708
2007	\$0.055	2015	\$0.501
2006	\$0.051	2014	\$0.215
2005	\$0.022	2013	\$0.383

By the Numbers

\$2.37B - Northrop Grumman for the development of two satellites for the Next-Generation Overhead Persistent Infrared missile warning system.

\$2.3B - Raytheon - From Saudi Arabia (via the US Missile Defense Agency) for AN-TPY-2 radar systems

\$2B - ViaSat and Data Link Solutions (a joint venture of Collins Aerospace a div. of **Raytheon Tech.** and BAE) for Joint Tactical Radio Systems from the Navy over five years.

\$2B - Northrop Grumman - US State Department approved 3 E-2D Advanced Hawkeye aircraft to France

\$2B - Boeing - US State Department approved 8 MV-22 Block C Osprey aircraft

\$1.79B - Aerojet Rocketdyne for 18 RS-25 space rocket engines for the Space Launch System

\$1.52B: Lockheed Martin from New Zealand for five C-130-J-30 Super Hercules transport aircraft.

\$1.42B - Kuwait received State Department approval for its Patriot missile defense system. If approved by Congress, **Raytheon, Lockheed Martin, Leidos,** and **KBR** will perform the upgrades.

\$1B+ - Germany is moving forward with plans to buy 30 **Boeing** F/A-18 E/F Super Hornets and 15 EA-18G Growler aircraft to replace aging Panavia Tornado planes.

\$975M - Textron, L3 Harris, Boeing Insitu - From the US Special Operations Command for drone-based intelligence, surveillance, and reconnaissance

\$950M: Raytheon, up to this amount for the Air Force Advanced Battle Management System.

\$950M - Awarded to 2 defense firms including **Raytheon, Boeing, Honeywell, L3 Harris, Lockheed Martin, Northrop Grumman** to work on the Joint All Domain Command and Control program.

\$900M - Sikorsky (**Raytheon Tech**) from India for MH-60R helicopters.

\$900M - L3 Harris - a 10-year contract to develop a standardized flight simulator architecture.

\$896.1M: Northrop for maintenance and support for US Customs and Border Protection P-3 Orion aircraft

By the Numbers

\$800M - Booz Allen from DoD under a 5-year \$800M contract.

\$657M - Boeing from the US Navy for 46 Harpoon anti-ship missiles. The order includes missile for Brazil, Thailand, Qatar, and Saudi Arabia.

\$551M: Raytheon from Bahrain for the Patriot defense systems and other products.

\$519M - Lockheed for upgrades to Spanish frigates that use the Aegis Weapon System.

\$485M - Lockheed received Foreign Military Sales contract to provide Sniper Advanced Targeting Pod and other airborne sensors to the 24 other countries.

\$386.3M: Textron from the Pentagon contract modification for the production of new landing craft, air cushion vehicles for the Navy.

\$380M: Sikorsky(Raytheon Tech) - US State Department approved 6 UH-60M Black Hawk helicopter to Lithuania

\$360.8M - Lockheed Martin - From the US Navy for 4 carrier-capable F-35s

\$333.4M - Northrop Grumman - From Australia for MQ-4C Triton drones.

\$135M - Pandemic assistance by the DoD to mid-tier defense contractors.

\$100M - Annual cost of a Space National Guard component estimated by the Congressional Budget Office

18 - Satellite request for proposals by the Space Development Agency - 8 Wide Field of View to demonstrate hypersonic detection capabilities and 10 for the agency's space-based communication network

6: Satellites ordered (7th in negotiation) by Intelsat with **Maxar** and **Northrop** to replace C-band satellites.

25%: Honeywell announced an increase in power while being more fuel efficient for the CH-4 Chinook helicopters.

Milestone B - Ball Aerospace's next-generation Weather System Follow-on Microwave System from Space Force.

**Total Price Return
(w/o dividends)**

	SPADE Defense Index
1-Yr	38.49%
3-Yr	63.99%
5-Yr	99.67%
10-Yr	310.26%
20-Yr	708.51%

Data through 12/31/19

Index Performance (ex div)

	SPADE Defense Index	S&P500	Alpha (bps)
YTD	[18.65%]	[4.04%]	[1461]
2019	38.49%	28.88%	961
2018	[8.15%]	[6.24%]	191
2017	28.92%	19.43%	949
2016	17.95%	9.53%	842
2015	3.23%	[0.73%]	396
2014	11.77%	11.39%	38
2013	48.27%	29.60%	1867
2012	16.30%	13.41%	289
2011	[2.75%]	[0.00%]	[275]
2010	9.62%	12.78%	[316]
2009	21.71%	23.45%	[174]

	SPADE Defense Index	S&P500	Alpha (bps)
2008	[38.03%]	[38.49%]	46
2007	22.17%	3.53%	1864
2006	19.33%	13.62%	571
2005	5.30%	3.00%	230
2004	20.47%	8.99%	1148
2003	37.27%	26.38%	1089
2002	[2.87%]	[23.37%]	2050
2001	0.94%	[13.04%]	1488
2000	4.98%	[10.14%]	1512
1999	15.31%	19.53%	[422]
1998	6.63%	26.67%	[2004]

Price Return by Decade (ex div)

	SPADE Defense	S&P500	Alpha (bps)
2010-2019	310.26%	189.73%	12,053 (120.53%)
2000-2009	97.07%	-24.11%	12,118 (121.18%)

About the SPADE Defense Index

The SPADE Defense Index (NYSE: DXS) provides an investment benchmark for the value that the market ascribes to companies involved with defense and its homeland security, and space components.

The Index is designed to reflect the broad diversity of activities that is representative of companies involved with the sector – including industrial firms that manufacture aircraft, tanks, ships, and missiles; and those involved with current and next generation systems related to network centric warfare and information technology; intelligence, surveillance, and reconnaissance; satellites; border security; and defense systems that protect the lives of our servicemen and servicewomen.

SPADE Indexes specializes in designing and managing equity benchmarks for ETF and other products.

Rules

The Index was designed to be RIC (registered investment company) compliant for the purpose of enabling financial products. Companies are required to meet a variety of eligibility criteria including market valuation, liquidity, and listing on a major U.S. exchange. Each firm is considered to be systematically important to the defense of the United States and defense is systematically important to the business, revenues, and health of the firm.

Full details are available on our website.

- * Market Cap: Minimum \$100M
- * Share Price: Minimum \$5.00
- * Sufficient Liquidity

Legal & Disclaimers

© 2020 SPADE Indexes LLC—SPADE, the SPADE icon, and “The SPADE Investor” newsletter are registered trademarks. SPADE Indexes LLC is the owner of the trademark, service marks, and copyrights related to its indices. This newsletter does not constitute an offer of an investment product. SPADE Indexes LLC makes no representation regarding the advisability of investing in vehicles based on the SPADE Defense Index. All information is provided ‘as is’ for informational purposes only and is not intended for trading purposes or advice. Neither SPADE Indexes LLC nor any related party is liable for any informational error, incompleteness or for any actions taken based on information contained herein.

Contact Information

SPADE Indexes LLC
 PO Box 5752
 Bethesda, MD 20824-5752
 Tel: (202) 596-1812
 info@spadeindex.com
<http://www.spadeindex.com>

End of 2Q20								Market	Forward	Price/	Price/	PEG		
		Percent	31-Mar-20	30-Jun-20	YTD	QTD		Cap	P/E	Sales	Book	5 yr		Div Ytd
		6/30/20	Price	Price	% Ch	% Ch		intraday	(ttm)	ttm	mrq	expected		forward %
Company	Ticker													
AXON International Inc.	AAAX	1.02%	70.77	98.13	33.91%	38.66%		5.87	71.63	10.44	10.49	2.71		
AAR Corp	AIR	0.19%	17.78	20.67	-54.17%	16.25%		0.73	25.21	0.33	0.77	1.10		1.43%
Aerojet Rocketdyne	AJRD	0.80%	41.83	39.64	-13.18%	-5.24%		3.11	20.02	1.58	4.99	4.53		
AeroVironment	AVAV	0.50%	60.96	79.63	28.98%	30.63%		1.92	36.87	5.22	3.73	1.45		
Boeing Co	BA	7.38%	149.43	183.3	-43.73%	22.67%		103.40	29.05	1.47	10.70	3.30		
Booz Allen	BAH	2.84%	68.61	77.79	9.36%	13.38%		10.75	19.16	1.44	12.60	1.82		1.59%
Ball Corp	BLL	3.94%	64.57	69.49	7.45%	7.62%		22.65	22.20	1.97	8.61	2.51		0.86%
BWX Technologies	BWXT	1.42%	48.66	56.64	-8.76%	16.40%		5.39	18.39	2.67	12.56	2.38		1.34%
CACI Intl	CACI	1.42%	211.4	216.88	-13.24%	2.59%		5.44	15.52	0.97	2.12	1.26		
CAE	CAE	1.13%	12.64	16.19	-38.81%	28.09%		4.30	17.04	1.12	2.60	3.55		
Comtech	CMTL	0.11%	13.29	16.89	-52.41%	27.09%		0.42	19.64	0.65	0.77	9.29		2.44%
Cubic Corp	CUB	0.39%	41.25	48.03	-24.45%	16.44%		1.50	12.98	1.00	1.68	4.13		0.56%
Curtiss Wright	CW	1.00%	92.43	89.28	-36.63%	-3.41%		3.72	12.63	1.48	2.23	1.58		0.76%
Ducommun	DCO	0.11%	24.89	34.87	-30.99%	40.10%		0.41	15.36	0.56	1.34	2.37		
Elbit Systems	ESLT	1.60%	127.69	137.05	-11.61%	7.33%		6.08	17.39	1.33	2.78	1.72		1.05%
FireEye	FEYE	0.70%	10.58	12.18	-26.32%	15.12%		2.71	60.88	3.00	4.09	2.54		
Flir Systems	FLIR	1.44%	31.89	40.57	-22.09%	27.22%		5.31	17.79	2.80	3.1	0.88		1.68%
General Dynamics	GD	5.35%	132.13	149.46	-15.25%	13.12%		42.88	13.23	1.12	3.25	3.02		
Heico	HEI	3.53%	74.52	99.65	-12.70%	33.72%		11.95	46.13	5.83	7.22	3.76		0.16%
Huntington Ingalls	HII	1.87%	182.02	174.49	-30.45%	-4.14%		7.06	12.57	0.78	4.30	2.40		2.36%
Honeywell Intl	HON	7.44%	133.81	144.59	-18.31%	8.06%		101.48	18.44	2.80	5.75	6.53		2.51%
Howmet	HWM	1.81%	15.4	15.85	2.92%	2.92%		6.91	17.83	0.52	1.46			
Hexcel	HXL	1.00%	37.14	56.22	-23.31%	51.37%		3.78	23.55	1.65	2.65	28.75		
Iridium	IRDM	0.88%	22.33	25.44	3.25%	13.93%		3.37	97.85	5.88	2.38	4.38		
Jacobs Engineering	J	2.97%	79.49	84.8	-1.21%	6.68%		11.03	13.91	0.86	1.98	1.62		0.90%
Kaman	KAMN	0.30%	38.33	41.6	-36.89%	8.53%		1.15	18.41	1.43	1.44	2.21		1.92%
KBR	KBR	0.84%	20.69	22.55	-26.07%	8.99%		3.21	12.6	0.55	1.97	2.13		1.77%
Kratos Defense & Security	KTOS	0.44%	13.84	15.63	-13.21%	12.93%		1.92	28.94	2.64	2.88	3.16		
Leidos	LDOS	3.48%	91.74	93.67	-4.31%	2.10%		13.31	14.92	1.17	3.96	1.71		1.45%
L3 Harris	LHX	4.58%	180.15	169.67	-14.25%	-5.82%		36.63	12.83	1.71	1.64	1.14		2.00%
Lockheed Martin	LMT	7.22%	339.13	364.92	-6.28%	7.60%		102.34	13.83	1.67	29.70	1.71		2.63%
Mantech International'a'	MANT	0.72%	72.67	68.49	-14.26%	-5.75%		2.75	20.82	1.18	1.83	3.70		1.87%
Maxar Technologies	MAXR	0.28%	10.68	17.96	14.61%	68.16%		1.09	3.60	0.67	1.65	1.25		0.22%
Moog Inc.	MOGA	0.48%	49.89	52.98	-37.91%	6.19%		1.75	14.48	0.58	1.39	1.13		1.88%
Mercury Computer Sys	MRCY	1.12%	71.34	78.66	13.82%	10.26%		4.37	33.19	5.78	3.18	1.60		
Northrop Grumman	NOC	6.38%	302.06	307.44	-10.62%	1.78%		51.25	12.14	1.50	5.67	1.52		1.89%
OSI Systems	OSIS	0.35%	68.92	74.64	-25.91%	8.30%		1.37	15.81	1.14	2.43	0.94		
Oshkosh Truck	OSK	1.28%	64.37	71.62	-24.33%	11.26%		4.88	12.35	0.60	1.81	2.69		1.68%
PAE Systems	PAE	0.13%	6.49	9.56	-14.26%	47.30%		0.88	---	0.81	7.92			
Perspecta	PRSP	0.98%	18.24	23.23	-12.14%	27.36%		3.73	12.91	0.83	2.75	2.34		1.22%
Parsons	PSN	0.96%	31.88	36.24	-12.21%	13.68%		3.65	26.07	0.91	2.23			
RADA Electronics	RADA	0.07%	3.5	6.54	26.01%	86.86%		0.28	43.60	5.18	4.34			
Raytheon Technologies	RTX	6.581%	58.84	61.62	5.31%	66.41%		93.36	15.6	0.69	2.37			3.08%
SAIC	SAIC	1.19%	74.63	77.68	-10.73%	4.09%		4.52	10.58	0.69	3.23	0.81		1.91%
Spirit Aerosystems	SPR	0.66%	23.92	23.94	-67.12%	0.08%		2.53	199.50	0.36	1.73	0.17		0.15%
Transdigm	TDG	3.98%	320.19	442.05	-21.06%	38.06%		23.90	40.15	4.00	5.68	14.91		
Teledyne Technologies	TDY	2.99%	297.92	310.95	-10.27%	4.37%		11.40	28.37	3.56	4.14	1.11		
Triumph Group	TGI	0.12%	6.71	9.01	-64.35%	34.28%		0.47	10.86	0.16	0.60	61.82		1.78%
Textron	TXT	1.98%	26.63	32.91	-26.21%	23.58%		7.49	13.83	0.56	1.35	3.67		0.24%
Vectrus	VEC	0.15%	41.34	49.13	-4.16%	18.84%		0.57	10.63	0.4	2.15			
Viasat Inc	VSAT	0.63%	35.92	38.37	-47.57%	6.82%		2.39	98.38	1.03	1.18	14.32		
Woodward	WWD	1.26%	59.44	77.55	-34.52%	30.47%		4.83	24.70	1.65	2.52	4.07		0.42%

Data Provided by Yahoo Finance, Thomson Reuters (P/E, PEG), Morningstar (div)