INTERNATIONAL POLICY REPORT

Promising the Sky: Pork Barrel Politics and the F-35 Combat Aircraft

By William D. Hartung *January 2014*

Executive Summary

Lockheed Martin claims that the development and construction of the F-35 combat aircraft sustains 125,000 jobs in 46 states. The company describes the F-35 as "the single largest job creator in the Department of Defense program." Lockheed Martin's numbers have been routinely reported in the media, and have become a mainstay of the debate over the fate of the F-35 program.

There's just one problem with Lockheed Martin's assertions about F-35 job creation. They are greatly exaggerated, as documented in this report:

•Lockheed Martin's claim of 125,000 F-35-related jobs is roughly double the likely number of jobs sustained by the program. The real figure, based on standard estimating procedures used in other studies in the field, should be on the order of 50,000 to 60,000 jobs.

•Similarly, the company's claim that there is significant work being done on the F-35 in 46 states does not hold up to scrutiny. Even by Lockheed Martin's own estimates, just two states – Texas and California – account for over half of the jobs generated by the F-35. The top five states, which include Florida, Connecticut and New Hampshire – account for 70% of the jobs (see appendix Table 2 for further details).

•Eleven states have fewer than a dozen F-35-related jobs, a figure so low that it is a serious stretch to count them among the 46 states doing significant work on the program. These states are Iowa, South Dakota, Montana, West Virginia, Delaware, Nebraska, North Dakota, Alaska, Hawaii, Louisiana and Wyoming.

•This study identifies 138 major F-35 contractors operating in 231 separate locations. Well over half of the contractors identified – 88 – were foreign companies conducting F-35 work outside of the United States. This does not necessarily indicate that a majority of the work on the plane is being done overseas, but it does suggest substantial outsourcing of F-35 work (for details see appendix tables 3 and 4). Countries with the most identified production sites include Italy (36), Australia (30), the United Kingdom (24) and Turkey (12). The United Kingdom is the largest participant in terms of sheer amount of production, but the work is concentrated in fewer sites than in some other countries mentioned.

•There is also evidence indicating that Northrop Grumman and Honeywell have used or produced F-35 components in China – including specialized magnets and sensor components – in violation of U.S. laws banning the use of Chinese parts in U.S. defense equipment. The companies assert that they have stopped using Chinese parts, but this issue will bear watching as production of the F-35 moves forward.

•The four most important F-35 contractors – Lockheed Martin ($4.1 million), BAE Systems ($1.4 million), Northrop Grumman ($3.5 million), and United Technologies, the parent company of F-35 engine-maker Pratt and Whitney ($2.1 million) – have made a total of $11.1 million in campaign contributions in the 2011/2012 and 2013/2014 election cycles. The vast majority of these contributions have gone to key members of the armed services or defense appropriations committees in the House and Senate, or to members of the 39-member House F-35 caucus.

•The top five recipients of contributions from F-35 contractors in the House of Representatives in the past two election cycles are House Armed Services Chair Howard P. "Buck" McKeon, $218,650; F-35 Caucus co-chair Rep. Kay Granger (R-TX), $195,950; Rep. Mac Thornberry (R-TX), $162,500; F-35 Caucus co-chair John Larson (D-CT), $137,450; and Rep. Jack Kingston (R-GA), $85,000 (for further details see Appendix Table 5).

Given the uncertainties surrounding the F-35 program, which has been identified as a possible budget-cutting target by a wide range of non-governmental and governmental bodies, it makes sense for communities that are looking to the F-35 as an important part of their economic futures to develop fallback plans that can be implemented in the event of the cancellation or scaling back of the F-35 program. States like Connecticut – home of the Pratt and Whitney division of United Technologies, which builds the engine for the F-35 – have taken the lead in this area by establishing their own transition commissions to develop strategies to diversify their economies (for a list of organizations that have recommended scaling back or canceling the F-35 program see footnote 21).

Introduction: Promises, Promises

"Powering Job Creation for America and Its Allies" – so says the headline of Lockheed Martin's web site for its F-35 combat aircraft. According to the company, the program – which if fully funded will cost an estimated $1.5 trillion to build and operate over its lifetime – will not only provide for the common defense but it will also deliver "tens of thousands of high paying, high quality jobs to American workers across the country, and around the world."[1] The company's claim about F-35 job creation sounds impressive indeed:

According to standard industry accepted forecasting, the multi-role 5th generation stealth fighter is responsible for more than 125,000 direct and indirect jobs, making it the single largest job generator in the Department of Defense program budget.[2]

Lockheed Martin has widely promoted the notion of the F-35 program as an unparalleled job creation machine, in advertisements, in fact sheets distributed to Congress, and in an online interactive map.

The claims about the F-35 as a job generator are an argument of last resort for a program that has been plagued by cost overruns, performance problems, and questions about how many are needed in a world in which aerial combat between rival fighter planes seems like an increasingly obsolete form of warfare.[3]

The debate about cost, capabilities, and strategic need will continue, but if past history is any guide, the fate of the plane may well hinge on the ability of the Air Force and the company's contractors to sell Congress and the public on the value of the F-35 as an economic development program. If so, it wouldn't be the first time that pork barrel politics trumped national security priorities in weapons procurement decision making. Given that fact, it is important to assess the accuracy of the economic claims that are being made on behalf of the F-35. How large will its economic impact be, and how does it compare to other uses of the same money?

Do the F-35 Job Claims Hold Up?

As noted above, Lockheed Martin asserts that its claim of 125,000 jobs created by the F-35 program is derived from standard industry forecasting methods. But a quick look at other studies in the field calls this assertion into question.

The standard method for estimating the job impact of a given form of spending is called input/output analysis. This approach looks at three types of jobs generated by a given activity: 1) Direct jobs involved in the building of the product (for example, assembling the F-35); 2) Indirect jobs created at companies that supply materials and services ("inputs") that go into producing the item; and 3) Induced jobs, which are the jobs created when workers in categories one and two spend their wages (for example, workers at an arms factory buying lunch at a local restaurant).[4] For short-

hand, some accounts – including Lockheed Martin's – simply refer to "indirect" and "induced" jobs as one category, indirect jobs.

The ratio of direct jobs to total jobs in the Lockheed Martin estimate far exceeds the ratio suggested by other studies in the field. Lockheed Martin claims that the 125,000 jobs created by the F-35 include 32,500 direct jobs and 92,500 indirect jobs. So the 125,000 total jobs are nearly four times the 32,500 figure for direct jobs (3.85, to be exact). By contrast, a 2011 analysis by Robert Pollin and Heidi Garrett-Peltier of the University of Massachusetts estimates total jobs per billion dollars generated by Pentagon spending at 11,200, with 6,800 of those being direct jobs. That puts total jobs at 1.6 times direct jobs, far lower than Lockheed Martin's figure of 3.85. Even an Aerospace Industries Association-funded study by Dr. Stephen Fuller of George Mason University suggests a ratio of direct to total jobs that is considerably less than the figure used by Lockheed Martin in its study.[5]

Applying the less generous ratio from the University of Massachusetts study to the figure of 32,500 direct jobs would put total jobs generated by the F-35 program in the range of 50,000 to 60,000 jobs, or less than half the 125,000 jobs claimed by Lockheed Martin. The number of F-35 jobs per state claimed in Lockheed Martin materials would come down by more than one-half as well. The distribution of the reductions is hard to specify without knowing more about how Lockheed Martin came up with its numbers.

Where the Jobs Are: Geographic Spread and Pork Barrel Politics

From a political standpoint, the number of jobs generated by a project is only half of the story. It is equally important to know *where* the jobs are located. Spreading contracts around to as many states and congressional districts as possible and making sure that districts of key members of Congress receive a healthy slice of the contracting pie are time-tested methods for generating broad political support for a weapons program. That's why Lockheed Martin has asserted that the F-35 program supports 125,000 jobs in 46 states. But just as the company has exaggerated the total *number* of jobs generated by the program, it has also exaggerated the geographic reach of work on the program. This will be discussed in more detail below.

Lockheed Martin has a long history of attempting to parlay the geographic spread of its contracts and subcontracts into budgetary clout. For example, in the early 1970s, when the company was seeking a government loan guarantee to stave off bankruptcy, company CEO Daniel Haughton cited an alleged 34,000 jobs in 35 states generated by its L-1011 aircraft, a troubled airliner that was a central to the company's survival.[6] When the Senate vote on the loan guarantees came down to the deciding vote – it won by 49-48 – Sen. Lee Metcalf (D-MT) switched to the pro-Lockheed side because, he said, "I'm not going to be the one putting those thousands of people out of work."[7]

But the jobs argument doesn't always carry the day. For example, in the case of its F-22 Raptor, Lockheed Martin repeatedly asserted that the aircraft would generate 95,000 jobs in 44 states – a substantial exaggeration, but an excellent talking point. Lockheed Martin used the argument that there were F-22 jobs virtually everywhere to gain the signatures of 44 senators and 200 members of the House of Representatives on a letter urging the Obama administration to continue funding the plane. But when push came to shove the company lost the battle to keep the F-22 program alive. The bipartisan coalition in the Senate that defeated it included everyone from Senate Armed Services Committee Chair Sen. Carl Levin (D-MI) and committee ranking member Sen. John McCain (R-AZ) to deficit hawk and Tea Party favorite Sen. Jim DeMint (R-SC), who has since left Congress to run the Heritage Foundation. While a number of prominent liberals with significant F-22 work in their states – including Democratic Senators like Dianne Feinstein and Barbara Boxer of California and Patty Murray of Washington State – voted to extend the program, their influence was counter-balanced by no votes by deficit hawks like DeMint, Sen. John Ensign (R-NV) and Sen. Mike Enzi (R-Wyo.).[8] A similar left-right coalition – spearheaded by Florida Republican Rep. Tom Rooney – killed General Electric's proposed alternative engine for the F-35, despite the fact that it would have been built in Ohio and was supported by House Speaker John Boehner (R-OH).[9]

As was the case with the F-22, the most vocal congressional advocates of high funding levels for the F-35 are members with significant work being done in their districts. For example, Rep. Kay Granger (R-TX), who has Lockheed Martin's final assembly plant for

the F-35 in her Fort Worth area district, co-chairs the 39-member F-35 caucus (for a list of caucus members, see Appendix Table 1). The other co-chair, Democratic Rep. John Larson of Connecticut, represents the district where Pratt and Whitney builds the engines for the F-35. Nearly one-third of the caucus membership (12 of 39) is composed of members from the state of Texas, where the primary assembly of the F-35 is done.[10] And when Rep. Jim Bridenstine (R-OK) joined the caucus in September 2013, he specifically cited the role of the Tulsa location of Ducommun LaBarge Technologies – which makes electronic components for the F-35 – as a reason for joining.[11]

A number of F-35 caucus members hold key positions that are particularly useful for promoting spending on the aircraft. Eleven caucus members serve on the House Armed Services Committee, and two – including caucus co-chair Kay Granger (R-TX) – serve on the Defense Appropriations Subcommittee of the House Appropriations Committee (for further details see Appendix Table 1).

Outside of the F-35 caucus, the most important F-35 supporter by far is House Armed Services Committee Chair Rep. Howard P. "Buck" McKeon (R-CA), who has a plant in his district that does F-35 work. He has received over three-quarters of a million dollars in campaign contributions from Pentagon contractors in the last three election cycles, and his top donors include Northrop Grumman and Lockheed Martin, both major F-35 contractors.[12] The program will lose an enthusiastic booster when McKeon retires at the end of his current term.

As extensive as the membership of the F-35 caucus may be – 39 members from 15 states – it represents members from less than one-third of the 46 states in which Lockheed Martin claims there is work being done on the F-35. If production work on the F-35 is so widely spread, why aren't representatives from more states part of the caucus? Because work on the F-35 is in fact highly concentrated, with many states receiving minimal benefits, even according to Lockheed Martin's own exaggerated claims.

According to Lockheed Martin's own analysis, the top five states receiving the most jobs from work on the Joint Strike Fighter – Texas (32.5%), California (19.75%), Florida (7.66%), Connecticut (6.87%) and New Hampshire (4.67%) – account for over 70% of the jobs generated by the F-35. Texas and California alone account for over 50% of F-35 jobs (see Appendix Table 2).

On the other end of the scale, the bottom 11 states – Iowa, South Dakota, Montana, West Virginia, Delaware, Nebraska, North Dakota, Alaska, Hawaii, Louisiana and Wyoming – have 12 or fewer jobs each stemming from work on the F-35 or its components. Counting these 12 states as part of the "46 states" with significant work on the F-35 is misleading. And this doesn't even account for the fact that Lockheed Martin's overall estimate for F-35-related jobs nationwide is probably at least twice the actual figure, which means that the numbers for each state should also be significantly lower than Lockheed Martin's estimates.

Who Makes the F-35?

While Lockheed Martin is quick to claim that its work on the F-35 is widely dispersed among a vast network of sub-contractors in the United States, its promotional materials identify only a handful of the U.S. firms involved in the program, including BAE Systems, Northrop Grumman, and the Pratt and Whitney division of United Technologies.

On the other hand, in our report we have identified 138 top contractors for the F-35 working in 233 separate locations, with descriptions of the nature of the work performed where possible (for full details, see Appendix Table 3). Interestingly, nearly two-thirds of the contractors identified – 88 – are doing work overseas, in partner nations that include the United Kingdom, Australia, Canada, Denmark, France, Italy, the Netherlands, Norway and Turkey. Similarly, over half of the work locations identified in our report – 123 – are outside the United States (see Appendix Tables 3 and 4).

Since our report is based on public records but is not a systematic sampling, the contractor count doesn't automatically mean that there is more F-35 work being done overseas than in the United States, but it is evidence of substantial outsourcing of F-35 production. Lockheed Martin has been downplaying this substantial foreign content in its appeals to Congress and the U.S. public regarding the number of F-35 jobs there will be in the United States.

It should be noted that the companies and locations identified in our report – whether foreign or domestic

– are all involved in building significant components of the plane. In this respect they are far more critical – and account for far more jobs – than the lower level subcontractors that Lockheed Martin claims as part of its F-35 supply chain. Our accounting is a good approximation of the major work sites involved in producing the F-35.

For production in the United States, the top five states with the largest number of identified locations involved in F-35 work are California (24), New York (9), Ohio (8), Texas (7), and Florida (6). These states account for over one-half of the U.S. F-35 locations enumerated in this report. Other than the case of California, the number of companies identified as doing F-35 work does not correlate with Lockheed Martin's claims as to the number of jobs in each state. This is because some locations involve relatively few jobs while others – like the primary final assembly facility for the F-35 in Fort Worth, Texas employ thousands doing F-35 work – over 6,000 people in Fort Worth, to be more precise.[13] (See table 4 for additional details on contractors by state and country).

But as noted above, this research project actually identified more foreign companies involved in building major components of the F-35 than it did domestic ones. The substantial foreign production involved in the F-35 program is by design. Each of the original nine partner nations (see footnote for full list) in the program agreed to contribute funding during the R&D phase of the project in exchange for a role in producing the plane and early access to F-35s as they come off of the production line.[14] Other F-35 buyers like Japan, Israel, and South Korea will also receive some work on the plane in connection with their prospective purchases. For example, in exchange for an order of just 40 planes, Lockheed Martin has promised to help South Korea develop a military communications satellite; to aid in South Korea's development of its own indigenous fighter plane, currently designated the K-X; and to help build a cyber-warfare training center.[15] And in Japan, Mitsubishi Industries is building a Final Assembly and Checkout facility (FACO) that will assemble 38 of the 42 F-35s the country is currently slated to purchase.[16]

While an exact breakdown of international work on the F-35 is not available, some of the major projects are widely known. In addition to the South Korean and Japanese examples cited above, Italy is slated to host a final assembly and checkout (FACO) facility. BAE Systems of the United Kingdom – far and away the most important non-U.S. partner in the project – will produce the aft fuselage and tails for the F-35 as well as significant avionics and electronic warfare components. In terms of numbers of work locations identified, the top country was Italy (36) followed by Australia (30), the United Kingdom (24), Turkey (12) and the Netherlands (7). As with the breakdowns by state within the United States, the number of locations identified doesn't tell the full story. BAE's work on the aft fuselage and tails of the F-35 creates many more jobs than any other single location outside of the United States, but the number of major contractors identified in the UK is less than in Italy or Australia. The figures for Italy may be more representative of the scope of work going on there, since Lockheed Martin has stated that "the vast majority of the Italian defense industry" is involved in the development and production of the F-35.[17]

There is also evidence indicating that Northrop Grumman and Honeywell have used or produced F-35 components in China – including specialized magnets and sensor components – in violation of U.S. laws banning the use of Chinese parts in U.S. defense equipment. The companies assert that they have stopped using Chinese parts, but this issue will bear watching as production of the F-35 moves forward.[18]

Buying Influence: Campaign Contributions by F-35 Contractors

In addition to mustering support from members of Congress by capitalizing on the locations of F-35 work, contractors on the project attempt to buy access and influence by making generous campaign contributions to key members of Congress. The four most important F-35 contractors – Lockheed Martin ($4.1 million), BAE Systems ($1.4 million), Northrop Grumman ($3.5 million), and United Technologies, the parent company of F-35 engine-maker Pratt and Whitney ($2.1 million) – have made a total of $11.1 million in campaign contributions in the 2011/2012 and 2013/2014 election cycles, the vast majority to key members of the armed services or defense appropriations committees in the House and Senate, or to members with F-35 work being carried

out in their states or districts.[19] The biggest recipient of donations from these four firms during the past two election cycles has been House Armed Services Committee chair Rep. Howard P. "Buck" McKeon (R-CA), with $218,650 in contributions. His top contributor in the current cycle has been Northrop Grumman, at $28,700; and his top contributor in the 2011/2012 cycle was F-35 prime contractor Lockheed Martin, at $75,700.[20]

Lockheed Martin and its allies have also been thinking ahead. F-35 contractors have been strong financial supporters of Rep. Mac Thornberry (R-TX), who may take over as chair of the House Armed Services Committee when Rep. McKeon retires at the end of 2014. Thornberry has received $162,500 from ten different F-35 contractors in the past two election cycles, led by Northrop Grumman ($32,500), Honeywell ($32,000) and Lockheed Martin ($25,000).[21]

In addition to focusing on committee leaders like Rep. McKeon and Rep. Thornberry, F-35 contractors gave generously to members of the F-35 caucus. The 39 current members of the caucus have received over $1.9 million from F-35 contractors in the last two election cycles – not just from the top four contractors mentioned above but from other key suppliers, including Alliant Techsystems, Elbit, Finmeccanica, Harris, Honeywell, L-3 Communications, Raytheon, and Rolls Royce. The caucus members receiving the highest levels of contributions from F-35 contractors were caucus co-chair Rep. Kay Granger (R-TX), $195,950; caucus co-chair Rep. John Larson (D-CT), $137,450; Rep. Jack Kingston (R-GA), $85,000; Rep. Tom Rooney (R-FL), $84,500; and Rep. Trent Franks (R-AZ), $75,800 (see Appendix Table 5).

Facing Reality: Promises Versus Prospects

While Lockheed Martin has greatly exaggerated the national, regional and local economic impacts of F-35 production, there is no question that some areas receive substantial income and employment from work related to the plane. But communities dependent upon F-35 funding for part of their business base should bear in mind that there are no guarantees that the program will get as much money or last as long as current projections by Lockheed Martin and the Air Force suggest. A series of non-governmental organizations from across the political spectrum have suggested eliminating or scaling back the F-35 program as one way to address the federal deficit, as have governmental analyses from the Congressional Budget Office and the Pentagon's Strategic Choices and Management Review (SCMR).[22]

It should be no surprise that the F-35 shows up on so many cut lists. At $1.5 trillion to procure and operate over its lifetime, it is the most expensive weapons program ever undertaken by the Pentagon. And it is slated to consume an average of $12.6 billion per year in procurement and development costs for over two decades, through 2037.[23] That's a large sum by any standard, and it will be particularly hard to meet at the same time that the Air Force is buying a costly new aerial refueling tanker and developing a new strategic bomber that could cost at least $55 billion for development and procurement alone.[24]

But cost is not the only problem with the F-35. It has exhibited serious performance problems at this stage of its development, from software issues to problems with the high-tech helmet that is supposed to feed essential information to the pilot. Perhaps more importantly, there is reason to believe that the F-35 might be less capable than current generation aircraft in a number of crucial respects. A RAND Corporation study has asserted that the F-35 has "inferior acceleration, inferior climb, and inferior sustained turn capability," or, in short hand, it "can't turn, can't climb, can't run."[25]

The F-35's problems have led the Congressional Budget Office to offer up a proposal for cancelling the program as one of the options it has presented to Congress in its annual volume on how to reduce the deficit. The CBO estimates that replacing the F-35 with upgraded Lockheed Martin F-16s and Boeing F/A-18s would save $48 billion between FY 2014 and FY 2023. It notes that while this option would reduce the stealth capabilities of the fighter force, those could be made up for with stealthy unmanned systems, long-range stealth bombers, or with a new aircraft design that lacks the drawbacks of the F-35. Most importantly, the CBO notes that "new F-16s and F/A-18s would be sufficiently advanced – if equipped with upgraded modern radar, precision weapons, and digital communications – to meet the threats the United States is likely to face in the foreseeable future."[26]

Switching from the F-35 to F-16s and F/A-18s would also offset some of the potential job losses associated

with canceling the F-35. And, by keeping both Boeing and Lockheed Martin in the fighter plane business, it would preclude the development of the Lockheed Martin monopoly in this sector that would result if current F-35 plans go forward.

Given these realities, it makes sense for communities that are looking to the F-35 as an important part of their economic futures to develop fallback plans that can be implemented in the event of the cancellation or scaling back of the F-35 program. At the federal level, the Office of Economic Adjustment at the Pentagon offers assistance to states and localities in developing diversification plans that can help generate alternative economic activity in the event of a cancellation of a program of particular importance to that area's economic health.[27] And states like Connecticut – home of the Pratt and Whitney division of United Technologies, which builds the engine for the F-35 – have established their own transition commissions to develop strategies to diversify their economies.

The Connecticut body – the Connecticut Commission on Business Opportunity, Defense Diversification, and Industrial Policy – or, in shorthand, the Commission on Connecticut's Future – includes legislators, state officials, and representatives of science, business and labor organizations.[28] Discussions are under way in other states – including North Carolina, Ohio and Wisconsin – on setting up similar commissions. There is much more that can be done at the state and federal level, from providing job training assistance to displaced workers to investing in activities like infrastructure and alternative energy that can serve as alternative sources of jobs.[29] And given that Pentagon spending is virtually the worst job creator of any action the federal government can take, it would not take a dollar-for-dollar replacement of defense spending reductions with new public investments to replace the number of jobs eliminated by the cancellation of a program like the F-35.[30] This is especially true, if as noted above, the F-35 is replaced with less expensive systems like the F-16 and F/A-18, which will create alternative jobs in the defense sector itself.

So, the bottom line is that the F-35 creates fewer jobs and affects fewer communities than Lockheed Martin and the other producers of the aircraft claim, and that with advance planning, alternative sources of employment can be generated in the defense and civilian sectors to offset any job losses the cancellation of the F-35 may cause. The key to managing the transition from F-35 jobs to other forms of employment is to plan ahead at the federal, state and local level and to look at other forms of public investment that can fill the gap left by the termination or scaling back of the F-35 program. This means that Congress and the executive branch can feel free to debate the future of the F-35 based on its strategic merits, not pork barrel politics.

Appendix Table 1

Members of the Joint Strike Fighter Caucus, 2014

With House Armed Services (HASC) and Defense Appropriations Subcommittee (DAS) Members Highlighted

Republican Members:

1. Joe Barton (R-TX)
2. Rob Bishop (R-UT), HASC
3. Jim Bridenstine (R-OK), HASC
4. Paul Broun (R-GA)
5. Larry Bucshon (R-IN)
6. John Carter (R-TX)
7. Steve Chabot (R-OH)
8. Michael Conaway (R-TX), HASC
9. Mario Diaz-Balart (R-FL)
10. Bill Flores (R-TX)
11. Trent Franks (R-AZ), HASC
12. Phil Gingrey (R-GA)
13. Paul Gosar (R-AZ)
14. Kay Granger (R-TX) (co-chair), DAS
15. Ralph Hall (R-TX)
16. Richard Hanna (R-NY)
17. Bill Johnson (R-OH)
18. Sam Johnson (R-TX)
19. Walter Jones (R-NC), HASC
20. Jack Kingston (R-GA), DAS
21. Doug Lamborn (R-CO), HASC
22. Kenny Marchant (R-TX)
23. Michael McCaul (R-TX)
24. David McKinley (R-WV)
25. Jeff Miller (R-FL), HASC
26. Randy Neugebauer (R-TX)
27. Ted Poe (R-TX)
28. Tom Rooney (R-FL)
29. Dennis Ross (R-FL)
30. Lamar Smith (R-TX)
31. Scott Tipton (R-CO)
32. Michael Turner (R-OH), HASC
33. Lynn Westmoreland (R-GA)

Democratic Members:

1. Robert Brady (D-PA), HASC
2. G.K. Butterfield (D-NC)
3. Andre Carson (D-IN), HASC
4. Joe Courtney (D-CT), HASC
5. John Larson (D-CT) (co-chair)
6. Sander Levin (D-MI)

Appendix Table 2
Percentage of U.S. F-35 Jobs By State

State	Percentage
Texas	32.54
California	19.75
Florida	7.66
Connecticut	6.78
New Hampshire	4.67
Ohio	3.49
New York	3.07
Maryland	2.97
Washington	2.22
Michigan	1.62
Illinois	1.58
Vermont	1.30
New Jersey	1.18
Georgia	1.15
Massachusetts	1.08
Arizona	.99
Indiana	.85
Utah	.83
Tennessee	.71
Maine	.67
Missouri	.63
Minnesota	.62
Pennsylvania	.61
Virginia	.52
Oregon	.50

State	Percentage
North Carolina	.44
Colorado	.32
Kansas	.26
Oklahoma	.17
Alabama	.16
Mississippi	.13
Nevada	.053
Rhode Island	.050
Kentucky	.050
Wisconsin	.041
Idaho	.040
South Carolina	.040
New Mexico	.034
Arkansas	.025
Iowa	.010
South Dakota	.010
Montana	.006
West Virginia	.006
Delaware	.003
Nebraska	.003
North Dakota	.003
Alaska	N/A
Hawaii	N/A
Louisiana	N/A
Wyoming	N/A

Source: Lockheed Martin, "F-35 Lightning II Economic Impact," available at https://www.f35.com/about/economic-impact-map

Note: As noted in the text of this report, Lockheed Martin's claim that the F-35 program creates 125,000 total jobs exaggerates the likely impact by a factor of two (i.e., there are half as many jobs or less than the company claims). However, for purposes of determining roughly where F-35 jobs are located, we accepted the company's estimates. This is based on the assumption that the exaggeration in total jobs was equally distributed across states. While not a perfect assumption, this approach gives a sense of which states are major F-35 suppliers and which are not, and demonstrates the majority of the program's jobs are in a few key states.

Appendix Table 3
Major F-35 Contractors – and What They Make[i]

Adacel: Orlando, FL (embedded Speech Recognition System, or eSRS); Melbourne, Australia (embedded Speech Recognition System)

Aerea: Milan, Italy (Advanced Rail Launcher, Fuselage Remote Interface Unit Components, Electro Hydraulic Actuation System Components)

Aero Sekur: Aprilia, Italy (Localized Enclosure)

Aerostaff Australia/Mahindra: Port Melbourne, Australia (Airframe and System Component Machining)

Alcoa: Cleveland, OH (Aluminum Structural Die Forgings); Simi Valley, CA; Possible Alternative Locations: Lafayette, IN (Aluminum Lithium); Birmingham, UK (Aluminum Lithium)

Alenia Aeronautica: Campania, Italy (Wing-Box); Turin, Italy (Wing Production)

Alliant Techsystems: Iuka, MS; Clearfield, UT (Upper Wing Box Skins, Lower Wing Skin, Access Cover, Aft and Forward Upper Fixed Skin, Nacelle Skins, Strap); Irvine, CA.

Alp Aviation: Eskisehir, Turkey (Airframe Structure and Assemblies, Production Landing Gear Components, F135 Titanium Integrated Blade Rotors)

Ametek Aerospace: Wilmington, MA (Sensor Suites, Data Management Systems, Cooling and Ventilating Systems, Environmental Control Systems, Various Subassemblies)

Aselsan: Ankara, Turkey (Advanced Optical Components, CNI Avionic Interface Controller)

ATS Kleizen: Netherlands (Composite Control Surfaces and Fixed Edges [Leading- and Trailing-Edge Wing and Empennage Components])

Avio Aero: Rivalta, Italy (Low Pressure Turbine, Combustion Chamber and Afterburner); Pomigliano D'Arco, Italy (Turbine Blades, Combustion Chamber and Afterburner); Possible Additional Location: Bielsko-Biala, Poland (Turbine Blades)

Aviogei: Aprilia, Italy (Heavy Weight Crane)

Continued on following page...

[i]Details on each company were gathered from public sources, including company and government web sites, business and industry publications, and local newspapers. An excellent background source and guide to the key contractors was Richard Aboulafia, "Lockheed Martin F-35 Joint Strike Fighter," profile, the Teal Group, February 2012. Where possible the city or town where the work is being done is indicated, but in some cases information was only available at the state or country level.

Appendix Table 3 Continued

Avionics Specialties (Partnered with Honeywell): Charlottesville, VA; Earlysville, VA (Low Observable Air Data System, Low Observable Multi-Function Probes, Flush-Mounted Static Pressure Ports)

AW Bell: Melbourne, Australia (Mechanical Assemblies for the F-35 Electronic Warfare System)

Aydin Yazilim ve Electronik Sanayi A.S (Ayesas): Grand Rapids, MI (Missile Remote Interface Unit, Panoramic Cockpit Display); Ankara, Turkey.

BAE Systems: Samlesbury, Lancashire UK (Aft Fuselage and Tails); Brough, Yorkshire, UK (Structural and Dynamic Test Facility); Adelaide, Australia (Vertical Tails, Rate Tooling, Input of Expertise into JSF Studies, Radar, TPS and Electronic Warfare Components); Edinburgh Parks, South Australia (Titanium Machining); Endicott, NY (BAE Systems Avionics); Fort Wayne, Indiana; Redmond, Washington, Fort Worth, Texas; Possible Alternative Aerospace Locations: Williamtown, Australia; Melbourne, Australia; Richmond, Australia; Possible Electronic Systems Locations: Austin, TX; Milpitas, CA

Broens: Ingleburn, Australia (Engine Components, Composite Tooling)

Cablex Pty Ltd.: Melbourne, Australia (Radar, TPS and Electronic Warfare Components, Ejection Seat Wiring)

Calytrix: Perth, Australia (Input of Expertise into JSF Studies)

Chemring Australia: Lara, Australia (Countermeasure Flares)

CIRA: Capua, Italy

CIRCOR Aerospace/Aerodyne Controls: Hauppauge, NY (Pneumatic Power Module for ITT's Weapons Ejection Racks); Corona, CA (Aerospace Products Group Headquarters)

Click Bond: Watertown, CT (High-Strength Structural Nutplates); Carson City, NV (Structural Adhesives, Composite Fasteners – Bonded Fasteners)

CMC Electronics: Cincinnati, OH (IR Detector Assemblies); Quebec, Canada (Optical Transceiver for the Harris Corporation)

Cobham Sensor Systems: San Diego, CA (Radar, Pilot Protection Mechanisms); UK.

Computer Sciences Corporation (CSC): Sydney, Australia (Radar, TPS and Electronic Warfare Components)

Curtiss-Wright/Curtiss-Wright Flight Systems: Charlotte, NC; Shelby, NC (Ordnance Hoist System, Quick Latch System); Gastonia, NC (Ordnance Hoist System, Quick Latch System)

Continued on following page...

Appendix Table 3 Continued

Cytec Engineered Materials: Woodland Park, NJ (Headquarters, Composite Materials/Structural Composites); Greenville, TX (Epoxy and Bismaleimide Prepreg Product Forms); Anaheim, CA (Epoxy and Bismaleimide Prepreg Product Forms); Possible Alternative Location: Wrexham, UK.

Dassault Systèmes: Auburn Hills, MI (Robotic Painting and Coating); Paris, France (Manufacturing Simulation Software, Product Lifecycle Management Solutions)

Delmia Robotics/Dassault Systèmes: Auburn Hills, MI (Robotic Painting and Coating)

Doncasters Group Ltd.: Georgia and Connecticut; Burton upon Trent, UK (Corporate Headquarters)

Ducommun AeroStructures: Gardena, CA (Inlet Lipskins); El Mirage, CA (Inlet Lipskins); Orange, CA.

Dunlop Aviation/Crane Hydro-Aire: Birmingham, UK (Wheels, Brakes, Tires); Burbank, CA (Wheels, Brakes, Tires)

Dy 4 Systems (Curtiss Wright): Kanata, Canada (Data Processor for Radar)

Eaton: Los Angeles, CA (Nose Wheel Steering System); Jackson, MI (Wing Fluid Delivery System on F-35B)

EDM Ltd: Manchester, UK (Headquarters, Hardware Based Training Devices)

EDO Corporation: Long Island, NY (Landing Aid Antennas); White Plains, NY.

Elettronica: Rome, Italy (EW Components, Logistic Support)

Elettronica Melara: Spezia, Italy

Elsag Datamat: Genoa, Italy (Autonomic Logistics Information System, Training System Support Center, Supply Chain Management, Maintenance Planning)

Esterline Technologies/Esterline Engineered Materials: Brea, CA (Sealing, Low Observable Technology); Valencia, CA (Sealing, Low Observable Technology); Bellevue, WA.

Ferra Engineering: Brisbane, Australia (Airframe and System Component Manufacturing, Supply of Vertical Tail Blanks, Alternate Mission Equipment Weapons Bay Adaptors); Possible Alternate Location: Grove, OK.

Finmeccanica (Alenia Aermacchi): Turin, Italy (Wing Box); Novara, Italy (Final Assembly and Checkout Facility)

Continued on following page...

Appendix Table 3 Continued

Flight Visions (Acquired by CMC Electronics): Sugar Grove, IL (Possible Products: Cockpit Systems, Integrated Cockpit Avionics)

Fokker Elmo: Izmir, Turkey (Electrical Wiring and Interconnection System, Center Section Wiring, Wiring Harnesses, Total Integrated Wiring System); Hoogerheide, the Netherlands (Electrical Wiring System); Papendrecht, the Netherlands (Electrical Wiring System).

Galileo Avionica: Palermo, Italy (Radio-Frequency Components); UK.

GasTOPS: Ottawa, Canada (Fan Eddy Current Sensors on F135 Engine)

Gemelli: Rome, Italy; Canegrate, Italy (Protective Headsets)

General Dynamics: Saco, ME (GAU-22/A Gun Systems); Williston, VT (GAU-22/A Gun Systems); Marion, VA (Advanced Lightweight Composite Radomes)

GKN Aerospace: Melbourne, Australia (Design of Centre Fuselage Structural Parts, Stress Analysis Expertise, Advance All-Composite F135 Engine Front Fan Case, Embedded Electro-Thermal Ice Protection System for the Engine, Canopy Transparency, High Value Composite Assemblies, Precision Machined Exotic Metal Structures); UK.

Goodrich: Cleveland, OH (Landing Gear System, Advanced Friction Materials for the LiftFan (TM) Clutch); Oldsmar, FL (Wiring Harnesses); Vergennes, VT (Actuators for Landing Gear, Bay Doors, Utility Access); Wolverhampton, UK (Actuation Systems, Bay Doors, Utility Access); Sydney, Australia (Actuation Systems, Bay Doors, Utility Access)

Hamilton Sundstrand (United Technologies): Windsor Locks, CT (Headquarters); Rockford, IL (Electrical Power Generation and Conversion System, Engine Controls, Gearbox and Externals for the Pratt & Whitney F135 Engine, Electronic Controls for Flight Actuation Systems)

Harris: Palm Bay, FL (Avionics)

Havelsan: Ankara, Turkey (Training Systems, Integrated Pilot and Maintenance Training Center)

Hawker de Havilland (The Boeing Company): Australia (Composite Parts and Subassemblies for the Center Fuselage)

Héroux-Devtek (Magtron): Cleveland, OH (Landing Gear Platform); Springfield, OH (Landing Gear Platform); Toronto, Canada (Electronic Chassis Components); Arlington, TX (Wingbox Parts, Inner Wing Bulkhead)

Hexcel: Stamford, CT (Headquarters, Carbon Fiber)

Hofmann Metaltec/Hofmann Engineering: Cheltenham, Australia (Engine Components, Composite Tooling)

Continued on following page...

Appendix Table 3 Continued

Honeywell Aerospace: Yeovil, Somerset, UK (OBOGS Technology)

IBM: Paris, France (Product Lifecycle Management Solutions)

Indigo Systems: Goleta, CA (IR Sensors/Integrated Detector Assemblies)

ITT Exelis: Salt Lake City, UT (Composite Blade Seal Components)

JC Carter (Owned by Atlas Copco): Costa Mesa, CA (Headquarters, Possible Products: Cryogenic Submerged Motor Pumps, Liquid Natural Gas Nozzles)

Kale Aerospace: Tuzla, Turkey (Airframe Structures and Assemblies, Landing Gear Lock Assemblies, High Pressure Compressor Subsystems, Motor Exhaust Winglets); Izmir, Turkey (Engine Production Hardware)

Kaiser Aluminum: Carlsbad, CA (Fabricated Aluminum Plate); Foothill Ranch, CA (Headquarters)

Kellogg, Brown & Root (KBR): Canberra, Australia (Training Courseware Design)

Kidde Aerospace (With Fenwal/Kidde Graviner, Hamilton Sundstrand): Wilson, NC (Engine Fire Detection System, Overheat Detection System, Dry Bay Suppression System)

Kitron ASA: Johnstown, PA; Billingstad, Norway (Electronic Test Equipment for the Electronic Warfare Program); Arendal, Norway (Integrated Backplane Assembly)

Kongsberg Gruppen: Kongsberg, Norway (Rudders and Vertical Leading Edges)

Kulite Semiconductor Products: Leonia, NJ (Pressure Sensors)

L-3 Communications: Rolling Meadows, IL (Crash Recorder/Crash Survivable Memory Unit, Panoramic Cockpit Display)

LaBarge (Ducommun): St. Louis, MO (Headquarters); Tulsa, OK (Printed Circuit Card Assemblies)

LAI International: Phoenix, AZ (Aluminum and Titanium Panels; Moved to Tempe, AZ in 2012); Westminster, MD (Titanium Vertical Tail Fin Components); Minneapolis, MN (Airframe Panels and Subassemblies); Tempe, AZ

Levett Engineering: Adelaide, Australia (Mechanical Assemblies for the F-35 Electronic Warfare System, Airframe and System Component Machining, F135 Engine Components)

Lockheed Martin: Fort Worth, TX (Final Assembly Site); Marietta, GA (Center Wings, Stealth Coating); Pinellas Park, FL (Canopy Components); Ocala, FL (Electro-Optical Targeting Sys-

Continued on following page...

Appendix Table 3 Continued

tem); Orlando, FL (Low Observable Window); Santa Barbara, CA (Electro-Optical Targeting System); Bethesda, Maryland (headquarters)

Logic: Rome, Italy

Lovitt Technologies Australia: Montmorency/Melbourne, Australia (Airframe Design, System Component Machining, Stress Analysis, Titanium Longeron Keels)

Magellan Aerospace: Kitchener, Ont., Canada (High-Velocity Hard Metal Machining); Winnipeg, Canada (Horizontal Tail Assembly); Ellanef (Owned by Magellan Aerospace): Bohemia, NY; Corona, Queens, New York.

Marand: Melbourne, Australia (Tail Fin Assembly, Composite Tooling, Rate Tooling, Engine Installation and Removal Trailer; Input of Expertise into JSF Studies); Moorabbin, Australia (Tail Fin Assembly)

Martin-Baker Aircraft Co. Ltd: Johnstown, PA (Ejection Seats); Higher Denham, UK (Ejection Seats)

MBDA Italia: Rome, Italy (SPEAR)

McCann Aerospace: Athens, GA (Headquarters, Machining); Macon, GA (Machining)

Mecaer: Borgomanero, Italy (Landing Gear Components)

Mercury Computer Systems: Chelmsford, MA (Signal Processing Systems); Possible Alternate Location: Cypress, CA (Signal Processing System)

Micreo Limited: Brisbane, Australia (Radar, TPS and Electronic Warfare Components)

Microtecnica (Goodrich): Turin, Italy (Actuation Systems); Luserna San Giovanni, Italy; Brugherio, Italy; Bristol, UK.

MiKES: Ankara, Turkey (Aircraft Components and Assemblies)

Moog Casella: Casella, Italy (Electro Hydraulic Actuation System Components); East Aurora, NY.

Northrop Grumman: Palmdale, CA (Center Fuselage, Electro-Optical Distributed Aperture System, AN/APG-81 Advanced Electronically Scanned Array, Mission Systems and Mission-Planning Software, Training Courseware); Falls Church, Virginia (Headquarters)

OMA: Foligno, Italy (Actuators, Hydraulic and Mechanical Components for Actuation Systems)

Oto Melara (Owned by Finmeccanica): Spezia, Italy (Gun [CTOL])

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Appendix Table 3 Continued

Parker Aerospace: Irvine, CA (Control Systems Division, Air & Fuel Division); Tolleson, AZ (Air & Fuel Division); Ayer, MA (Nichols Airborne Division); Elyria, OH (Nichols Airborne Division); Forest, OH (United Aircraft Products Division); Smithtown, NY (Electronic Systems Division); Fort Worth, TX (Stratoflex Division, Fueldraulic Line)

Partech Systems: Nowra, Australia (Radar, TPS, Electronic Warfare Components and Supporting Software, Environmental and Diagnostic Test Equipment)

Pelican-Trimcast: Knoxfield, Australia (Shipping Containers)

Philips Machinefabrieken: Eindhoven, Netherlands (Headquarters, Automated Production Equipment)

Piaggio Aero Industries: Finale Ligure, Italy (Bearing Compartment Housing and Support Structure, Low Pressure Turbine Case for F135); Genoa, Italy.

Pratt & Whitney: Dayton, OH (AFRL Compressor Research Facility); Hartford, CT (F135 Engine); Possible Alternative Manufacturing Locations: Middletown, PA; Middletown, NY; Clayville, NY; West Palm Beach, FL; Halifax, Nova Scotia; Possible Engine Assembly & Test Locations: Bridgeport, WV; Longueuil, Canada; Mississauga, Canada; Lethbridge, Canada

Quickstep Technologies Pty. Ltd: Bankstown, Australia (Bismaleimide and Graphite Epoxy Production Parts for Northrop Grumman's Center Fuselage, Vertical Tails, Carbon Fiber Composite Skins and Sub-Assemblies)

Raytheon: El Segundo, CA (Space and Airborne Systems Headquarters, Integrated Core Processor, Digital Anti-Jam Receiver)

RMI Titanium (Owned by RTI): Niles, OH (Titanium)

ROKETSAN and Tubitak-SAGE: Elmadağ, Turkey (Stand-off Missile); Lalahan, Turkey (Stand-off Missile)

Rolls-Royce: Bristol, UK (LiftFan Turbomachinery); Indianapolis, IN (LiftFan gearbox, Clutch, Driveshaft and Nozzle)

Rosebank Engineering: Bayswater, Australia (Actuators for Landing Gear, Bay Doors and Utility Access)

Rotodyne: Saronno, Italy (Hydraulic Test Stands, Hydraulic and Mechanical Lifting Devices, Ground Power Units, Frequency Converters and Power Supplies, SE Carts)

S3LOG: Rome, Italy

Samputensili: Ortona, Italy

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Appendix Table 3 Continued

Secondo Mona: Milan, Italy (Actuators, Electro Hydraulic Actuation System Components)

SEC Plating: Sydney, Australia (Mechanical Assemblies for the Electronic Warfare System)

Selex Communication (Marconi): Montevarchi, Italy (Landing Aids Down Converter); Cisterna Di Latina/Pomezia, Italy; Rome, Italy (Back-Up Radio)

Selex Galileo: Turin, Italy (Electronic Warfare Components, Ejection Seat Firing System, EOTS Vacuum Cell)

Selex SI (Now Selex ES/Finmeccanica): Rome, Italy; Campi Bisenzio, Italy (Electro-Optical Targeting System, Vacuum Cell Assembly)

Serck Aviation: Birmingham, UK (Heat Exchangers on F135); Possible Alternative Locations: Paisley, UK; Newcastle, UK; Coleshill, UK; Hayes, UK

Sirio Panel: Montevarchi, Italy (Cockpit Lighting and Panels)

Smiths Aerospace/GE Aviation Systems: Grand Rapids, MI (Advanced Memory Unit, Fuselage Remote Interface, Missile Remote Interface); Cheltenham, Gloucestershire, UK (Avionics and Electrical Power System); Eastleigh Plant in Southampton, UK (Engine Monitoring Equipment)

Stellex Monitor Aerospace (Owned by GKN): Possible Locations: Burbank, CA; Amityville, NY; Wellington, KS (Complex Metal/Titanium Structures); More General Locations: California, New York, Kansas.

Stork Aerospace (Owns Fokker Elmo): Naarden, Netherlands (Flaperons, Composite Parts and Subassemblies)

Tactair Fluid Controls (Young and Franklin, Inc.): Liverpool, NY.

Tasman Aviation Enterprises (TAE): Brisbane, Australia (Advanced Solder Braising Competencies, Avionics Chassis)

TCS Group: Torino, Italy (Oil Nozzle Components for the Main F135 Engine Bearing Compartments, Boroscope Adaptors)

Terma: Aarhus, Denmark (Headquarters – Large Composite Skins for the Horizontal and Verticle Tail, 25 MM Gun Pod)

Thales NL: Sydney, Australia (Engineering Support and ITC Design)

TNO-FEL: The Hague, the Netherlands (Signal-Conditioning Algorithms for the Electro-Optical Distributed Aperture System (EO DAS))

Transtar Metals: Torrance, CA (Fabricated Aluminum Plate); Los Angeles, CA (Aluminum Plate)

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Appendix Table 3 Continued

Turkish Aerospace Industries: Ankara, Turkey (Center Fuselages, Composite Skins, Weapons Bay Doors, Fiber Placement Composite Air Inlet Ducts, Alternate Mission Equipment)

Turkish Engine Industries: Eskisehir, Turkey ("Blisk Spool" Engine Parts)

Tyco Electronics: Possible Location: Harrisburg, PA (High Power Electronic Distribution Unit)

Ultra Electronics: Cheltenham, Gloucestershire, UK (HiPPAG/Weapons Air Release Compressor); Fort Wayne, IN (Weapons Release Air Compressor)

Varley: Tomago, Australia (Handling Fixtures)

Vipac: Adelaide, Australia (Airframe Design and Stress Analysis Expertise)

Vision Systems International (Joint Venture of Elbit, Kaiser Electronics, and Rockwell Collins): San Jose, CA (Headquarters) and Fort Worth, TX (Helmet Mounted Display System, or HMDS)

Vitrociset: Rome, Italy (High-Performance Carts, Test Set for Radio Frequency Cables)

Volvo Aero Norge: Kongsberg, Norway (Intermediate Case, F135 Engine Shaft)

Vought Aircraft Industries: Milledgeville, GA (Lower Wing Skins)

Weber Metals: Long Beach, CA (Aluminum and Titanium Forgings); Paramount, CA (Aluminum and Titanium Forgings)

W.L. Gore: Landenberg, PA (Interconnect Devices and Cables)

Wyman-Gordon: Grafton, MA (Titanium Forgings/Various Components)

York: Milan, Italy

Appendix Table 4
Major F-35 Contractors by State and Country

F-35 Contractors Operating in the United States

State	Contractor(s)
Arizona	LAI International Parker Aerospace
California	Alcoa Alliant Techsystems CIRCOR Cobham Sensor Systems Cytec Engineered Materials Ducommun AeroStructures Dunlop Aviation/Crane Hydro-Aire Eaton Esterline Technologies/Esterline Engineered Materials Indigo Systems JC Carter Kaiser Aluminum Lockheed Martin Northrop Grumman Parker Aerospace Raytheon Stellex Monitor Aerospace (Owned by GKN) Transtar Metals Vision Systems International (Joint Venture of Elbit, Kaiser Electronics, and Rockwell Collins) Weber Metals
Connecticut	Click Bond Doncasters Group, Ltd. Hamilton Sundstrand (United Technologies) Hexcel Pratt & Whitney (Owned by United Technologies)
Florida	Adacel Goodrich Harris Lockheed Martin
Georgia	Doncasters Group, Ltd. Lockheed Martin McCann Aerospace Vought Aircraft Industries

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Appendix Table 4
Major F-35 Contractors by State and Country

State	Contractor(s)
Illinois	Flight Visions Hamilton Sundstrand (Owned by United Technologies) L-3 Communications
Indiana	BAE Systems Rolls-Royce Ultra Electronics
Kansas	Stellex Monitor Aerospace (Owned by GKN)
Maine	General Dynamics
Maryland	LAI International Lockheed Martin
Massachusetts	Ametek Aerospace Mercury Computer Systems Parker Aerospace Wyman-Gordon
Michigan	Aydin Yazilim ve Electronik Sanayi A. S. (Ayesas) Dassault Systèmes Delmia Robotics Eaton Smiths Aerospace/GE Aviation Systems
Minnesota	LAI International
Mississippi	Alliant Techsystems
Missouri	LaBarge (Owned by Ducommun)
Nevada	Click Bond
New Jersey	Cytec Engineered Materials Kulite Semiconductor Products
New York	BAE Systems CIRCOR EDO Corporation Ellanef (Owned by Magellan Aerospace) Moog Parker Aerospace Stellex Monitor Aerospace (Owned by GKN) Tactair Fluid Controls (Owned by Young and Franklin, Inc.)

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Appendix Table 4
Major F-35 Contractors by State and Country

State	Contractor(s)
North Carolina	Curtiss-Wright/Curtiss-Wright Flight Systems Kidde Aerospace (With Fenwal/Kidde Graviner, Hamilton Sundstrand)
Ohio	Alcoa CMC Electronics Goodrich Héroux-Devtek (Owned by Magtron) Parker Aerospace Pratt & Whitney (Owned by United Technologies) RMI Titanium
Oklahoma	Ferra LaBarge (Owned by Ducommun)
Pennsylvania	Kitron ASA Martin-Baker Aircraft Co. Ltd. Tyco Electronics W.L. Gore
Texas	BAE Systems Cytec Engineered Materials Héroux-Devtek (Owned by Magtron) Lockheed Martin Parker Aerospace Vision Systems International (Joint Venture of Elbit, Kaiser Electronics, and Rockwell Collins)
Utah	Alliant Techsystems ITT Exelis
Vermont	General Dynamics Goodrich
Virginia	Avionics Specialties (Partnered with Honeywell) General Dynamics Northrop Grumman
Washington	BAE Systems Esterline Technologies/Esterline Engineered Materials

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Appendix Table 4
Major F-35 Contractors by State and Country

F-35 Contractors Operating outside of the United States

Country	Contractor(s)
Australia	Adacel Aerostaff Australia/Mahindra AW Bell BAE Systems Broens Cablex Pty Ltd. Calytrix Chemring Computer Sciences Corporation (CSC) Ferra Engineering GKN Aerospace Goodrich Hofmann Metaltec/Hofmann Engineering Kellogg, Brown & Root (KBR) Levett Engineering Lovitt Technologies Australia Marand Micreo Limited Partech Systems Pelican-Trimcast Quickstep Technologies Pty. Ltd. Rosebank Engineering SEC Plating Tasman Aviation Enterprises (TAE) Thales NL Varley Vipac
Canada	CMC Electronics Dy 4 Systems (Owned by Curtiss Wright) GasTOPS Héroux-Devtek (Owned by Magtron) Magellan Aerospace
Denmark	Terma
France	Dassault Systèmes IBM

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Appendix Table 4
Major F-35 Contractors by State and Country

Country	Contractor(s)
Italy	Aerea Aero Sekur Alenia Aeronautica Avio Aero Aviogei CIRA Elettronica Elettronica Melara Elsag Datamat Finmeccanica (Owned by Alenia Aermacchi) Galileo Avionica Gemelli Logic MBDA Italia Mecaer Microtecnica Moog Casella OMA Oto Melara (Owned by Finmeccanica) Piaggio Aero Industries Rotodyne S3LOG Samputensili Secondo Mona Selex Communication (Owned by Marconi) Selex Galileo Selex SI (Now Selex ES/Finmeccanica) Sirio Panel TCS Group Vitrociset York
The Netherlands	ATS Kleizen Fokker Elmo Philips Machinefabrieken Stork Aerospace (Owns Fokker Elmo) TNO-FEL

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Appendix Table 4
Major F-35 Contractors by State and Country

Country	Contractor(s)
Norway	Kitron ASA Kongsberg Gruppen Volvo Aero Norge
Turkey	Alp Aviation Aselsan Aydin Yazilim ve Electronik Sanayi A.S (Ayesas) Fokker Elmo Havelsan Kale Aerospace MiKES ROKETSAN and Tubitak-SAGE Turkish Aerospace Industries Turkish Engine Industries
The United Kingdom	BAE Systems Cobham/Cobham Sensor Systems Doncasters Group Ltd. Dunlop Aviation/Crane Hydro-Aire EDM Ltd. Galileo Avionica GKN Aerospace Goodrich Honeywell Aerospace Martin-Baker Aircraft Co. Ltd. Rolls-Royce Serck Aviation Smiths Aerospace/GE Aviation Systems Ultra Electronics

Appendix Table 5

Political Contributions to Members of the F-35 Caucus by F-35 Contractors (2011/2012 and 2013/2014 Election Cycles)

F-35 contractors made a total of $1,953,240 to the 39 members of the F-35 Caucus during the 2011/2012 and 2013/2014 election cycles.[i] An alphabetical listing of contributions to caucus members follows:

Joe Barton [R-TX]
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $22,055
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$10,000 • Honeywell-$5,000	• Lockheed Martin-$4,000 • Honeywell-$1,055 • Raytheon-$1,000 • L-3 Communications-$1,000

Rob Bishop [R-UT]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $66,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$15,000 • Lockheed Martin-$9,500 • Northrop Grumman-$8,500 • Alliant Techsystems-$8,000 • L-3 Communications-$5,000	• Honeywell-$7,000 • L-3 Communications-$5,000 • Lockheed Martin-$3,500 • United Technologies-$2,500 • Finmeccanica-$2,500

Robert Brady [D-PA]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $9,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Northrop Grumman-$4,000 • Raytheon-$3,000 • Lockheed Martin-$2,000	• N/A

[i] Data was gathered from OpenSecrets.org, the web site of the Center for Responsive Politics, and all numbers include campaign contributions associated with both the relevant Campaign Committees and Leadership PAC's. **Data covers donations made through Monday, October 28, 2013**

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Appendix Table 5 Continued

Jim Bridenstine [R-OK]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $8,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
N/A	• Honeywell-$2,000 • Northrop Grumman-$2,000 • BAE Systems-$1,000 • General Dynamics-$1,000 • Lockheed Martin-$1,000 • Raytheon-$1,000

Paul Broun [R-GA]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $13,206
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• McCann Aerospace-$5,000 • Lockheed Martin-$4,206 • Raytheon-$4,000	• N/A

Larry Bucshon [R-IN]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $5,055
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• N/A	• Northrop Grumman-$2,000 • Honeywell-$1,055 • Raytheon-$1,000 • BAE Systems-$1,000

GK Butterfield [D-NC]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $26,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Northrop Grumman-$11,000 • Lockheed Martin-$8,000 • Finmeccanica-$4,000	• Lockheed Martin-$2,000 • Finmeccanica-$1,000

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Appendix Table 5 Continued

Andre Carson [D-IN]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $35,250
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Raytheon-$8,500 • Rolls-Royce-$6,250 • General Dynamics-$3,000 • Honeywell-$2,500	• Raytheon-$5,000 • Northrop Grumman-$5,000 • United Technologies-$2,500 • General Dynamics-$2,500

John Carter [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $42,055
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• BAE Systems-$10,500 • Lockheed Martin-$8,500 • Northrop Grumman-$7,000 • Honeywell-$6,000	• Northrop Grumman-$5,000 • Raytheon-$2,000 • Honeywell-$1,555 • Lockheed Martin-$1,500

Steve Chabot [R-OH]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $20,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$6,000 • Honeywell-$5,000 • Raytheon-$5,000	• Raytheon-$1,000 • General Dynamics-$1,000 • BAE Systems-$1,000 • United Technologies-$1,000

Michael Conaway [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $56,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• General Dynamics-$17,500 • Raytheon-$10,000 • Lockheed Martin-$9,000 • Honeywell-$5,500	• Northrop Grumman-$8,500 • General Dynamics-$4,000 • Raytheon-$2,000

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Appendix Table 5 Continued

Joe Courtney [D-CT]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $105,250
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• General Dynamics-$30,250 • United Technologies-$23,000 • Honeywell-$15,000 • Lockheed Martin-$12,500 • Raytheon-$10,000	• Raytheon-$5,000 • General Dynamics-$4,000 • Finmeccanica-$2,500 • Lockheed Martin-$2,000 • United Technologies-$1,000

Mario Diaz-Balart [R-FL]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $29,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$7,000 • General Dynamics-$5,500 • United Technologies-$5,000	• General Dynamics-$3,500 • Northrop Grumman-$2,500 • United Technologies-$2,500 • Raytheon-$2,000 • Honeywell-$1,000

Bill Flores [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $32,134
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$13,134 • Lockheed Martin-$5,000 • L-3 Communications-$4,000 • United Technologies-$3,000	• L-3 Communications-$5,000 • Lockheed Martin-$1,000 • Honeywell-$1,000

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Appendix Table 5 Continued

Trent Franks [R-AZ]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $81,800
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$24,800 • Raytheon-$18,000 • Lockheed Martin-$10,000 • Northrop Grumman-$7,000 • General Dynamics-$4,000 • Alliant Techsystems-$2,000 • Rolls-Royce-$1,000	• Northrop Grumman-$5,000 • Lockheed Martin-$3,500 • Honeywell-$2,500 • General Dynamics-$2,000 • Raytheon-$2,000

Phil Gingrey [R-GA]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $68,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$20,000 • Honeywell-$11,000 • United Technologies-$7,500	• Lockheed Martin-$15,000 • Honeywell-$10,000 • United Technologies-$5,000

Paul Gosar [R-AZ]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $13,499
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$7,499 • Raytheon-$5,000	• General Dynamics-$1,000

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Appendix Table 5 Continued

Kay Granger [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $200,950
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$71,450 • Northrop Grumman-$18,500 • United Technologies-$15,000 • Elbit Systems-$10,500 • Raytheon-$10,000 • Honeywell-$10,000 • Alliant Techsystems-$10,000 • Finmeccanica-$7,000 • BAE Systems-$5,000 • General Dynamics-$4,000	• Lockheed Martin-$11,000 • Northrop Grumman-$5,000 • United Technologies-$5,000 • Honeywell-$4,000 • Elbit Systems-$3,500 • Finmeccanica-$3,500 • Rolls-Royce-$2,500 • BAE Systems-$2,000 • L-3 Communications-$1,000 • General Dynamics-$1,000 • Raytheon-$1,000

Ralph Hall [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $39,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$11,000 • Raytheon-$10,000 • Honeywell-$7,500 • United Technologies-$3,500	• Honeywell-$4,500 • Raytheon-$2,000 • Lockheed Martin-$1,000

Richard Hanna [R-NY]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $34,999
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$17,499 • Lockheed Martin-$6,000 • BAE Systems-$4,000 • United Technologies-$3,000	• Honeywell-$2,500 • Northrop Grumman-$2,000

Continued on following page...

Appendix Table 5 Continued

Bill Johnson [R-OH]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $23,499
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$14,999 • General Dynamics-$6,000	• Honeywell-$2,500

Sam Johnson [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $50,345
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Raytheon-$20,250 • Lockheed Martin-$10,000 • Honeywell-$7,000 • United Technologies-$5,000 • General Dynamics-$3,000	• Honeywell-$2,095 • General Dynamics-$2,000 • United Technologies-$1,000

Walter Jones [R-NC]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $17,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$5,000 • Lockheed Martin-$5,000 • Northrop Grumman-$3,000 • Rolls-Royce-$3,000	• Northrop Grumman-$1,000

Jack Kingston [R-GA]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $120,450
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Raytheon-$20,000 • General Dynamics-$19,000 • Lockheed Martin-$12,500 • Northrop Grumman-$12,500	• General Dynamics-$16,450 • Northrop Grumman-$10,000 • Raytheon-$10,000 • Honeywell-$10,000 • Lockheed Martin-$10,000

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Appendix Table 5 Continued

Doug Lamborn [R-CO]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $74,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$15,500 • Northrop Grumman-$11,000 • Lockheed Martin-$10,000 • Raytheon-$9,000 • United Technologies-$7,000 • Harris-$5,000	• Lockheed Martin-$5,000 • Northrop Grumman-$5,000 • Honeywell-$5,000 • United Technologies-$2,000

John Larson [D-CT]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $142,950
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• United Technologies-$57,450 • Lockheed Martin-$20,000 • General Dynamics-$17,000 • Honeywell-$11,000 • Raytheon-$6,500	• Lockheed Martin-$11,000 • United Technologies-$10,500 • BAE Systems-$5,000 • General Dynamics-$3,000 • Raytheon-$1,500

Sander Levin [D-MI]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $79,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed-$20,000 • Raytheon-$15,000 • Honeywell-$14,000 • United Technologies-$10,000	• Raytheon-$7,000 • BAE Systems-$6,000 • Lockheed-$4,500 • Northrop Grumman-$2,500

Kenny Marchant [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $25,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$8,000 • Raytheon-$7,500 • United Technologies-$3,500	• Lockheed Martin-$3,000 • Northrop Grumman-$2,000 • Raytheon-$1,000

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Appendix Table 5 Continued

Michael McCaul [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $62,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Raytheon-$10,000 • BAE Systems-$10,000 • Northrop Grumman-$8,000 • Lockheed Martin-$8,000 • Honeywell-$7,000	• United Technologies-$5,000 • Raytheon-$4,000 • L-3 Communications-$3,500 • Northrop Grumman-$3,500 • Lockheed Martin-$3,000

David McKinley [R-WV]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $51,189
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$14,634 • United Technologies-$10,000 • Northrop Grumman-$7,500 • Lockheed Martin-$6,000	• Northrop Grumman-$7,500 • Lockheed Martin-$2,000 • United Technologies-$2,000 • Honeywell-$1,555

Jeff Miller [R-FL]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $97,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• BAE Systems-$11,000 • Lockheed Martin-$10,500 • United Technologies-$10,000 • Finmeccanica-$10,000 • Northrop Grumman-$10,000 • L-3 Communications-$9,000 • General Dynamics-$8,000	• Northrop Grumman-$10,000 • BAE Systems-$5,000 • General Dynamics-$4,000 • Finmeccanica-$3,000 • L-3 Communications-$3,000 • Lockheed Martin-$3,000 • Honeywell-$1,000

Randy Neugebauer [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $18,055
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$9,500 • Honeywell-$5,000	• Northrop Grumman-$2,000 • Honeywell-$1,555

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Appendix Table 5 Continued

Ted Poe [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $12,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Lockheed Martin-$6,000 • Honeywell-$2,500	• Lockheed Martin-$1,000 • Northrop Grumman-$1,000 • Raytheon-$1,000 • United Technologies-$1,000

Tom Rooney [R-FL]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $84,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• United Technologies-$20,000 • Honeywell-$15,000 • Northrop Grumman-$15,000 • Lockheed Martin-$10,000	• Northrop Grumman-$10,000 • Honeywell-$5,500 • United Technologies-$5,000 • Lockheed Martin-$3,000 • Raytheon-$1,000

Dennis Ross [R-FL]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $15,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$8,000 • Lockheed Martin-$4,000 • Northrop Grumman-$2,500	• Honeywell-$1,000

Lamar Smith [R-TX]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $62,500
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$17,000 • Raytheon-$7,500 • Northrop Grumman-$7,000 • Lockheed Martin-$6,000	• Honeywell-$11,000 • Northrop Grumman-$7,000 • Raytheon-$5,000 • Lockheed Martin-$2,000

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Appendix Table 5 Continued

Scott Tipton [R-CO]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $18,499
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$7,499 • Lockheed-$6,000	• Lockheed-$3,000 • Raytheon-$2,000

Michael Turner [R-OH]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $48,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• Honeywell-$10,000 • General Dynamics-$10,000 • Raytheon-$10,000 • Lockheed Martin-$10,000	• Honeywell-$3,500 • Northrop Grumman-$3,500 • Lockheed Martin-$1,000

Lynn Westmoreland [R-GA]:
TOTAL CONTRIBUTIONS FROM F-35 Contractors, 2011/2012 and 2013/2014 Election Cycles: $41,000
BREAKDOWN:

2011/2012 Cycle	2013/2014 Cycle
• United Technologies-$10,500 • General Dynamics-$10,000 • Raytheon-$7,000 • Lockheed-$6,000	• United Technologies-$3,000 • Raytheon-$2,500 • Lockheed-$2,000

Endnotes

[1] Even allowing for the Pentagon's recent claims of a modest $4 billion drop in total procurement costs for the F-35 program – from $395.7 billion to $391.2 billion – total lifetime costs for the program come out to $1.5 trillion. See Andrea Shalal-Esa, "U.S. Sees First Drop in F-35 Costs; Other Programs Steady," Reuters, May 23, 2013, available at http://www.reuters.com/article/2013/05/23/us-lockheed-fighter-idUSBRE94M18N20130523 And Pentagon and Air Force claims of reductions in long-term operating costs for the F-35 appear to be based largely upon arbitrary assumptions, as noted in Giovanni di Briganti, "Lower F-35 Operating Costs Should be Taken with a Grain of Salt," defense-aerospace.com, available at http://www.defense-aerospace.com/articles-view/feature/5/147327/lower-f_35-costs-need-a-pinch-of-salt.html

[2] "F-35 Lightning II Economic Impact," Lockheed Martin web site: https://www.f35.com/about/economic-impact

[3] For a good overview of problems with the F-35, see Winslow Wheeler, "The Jet That Ate The Pentagon," Foreignpolicy.com, April 26, 2012, available at http://www.foreignpolicy.com/articles/2012/04/26/the_jet_that_ate_the_pentagon

[4] For a discussion of the concepts of direct, indirect, and induced jobs see Robert Pollin and Heidi Garrett-Peltier, "The U.S. Employment Effects of Military and Domestic Spending Priorities: 2011 Update," Political Economy Research Institute, University of Massachusetts, Amherst, December 11, 2011, p. 4. Available at http://www.peri.umass.edu/fileadmin/pdf/published_study/PERI_military_spending_2011.pdf

[5] Dr. Stephen S. Fuller, "U.S. Economic Impact of Approved and Projected DOD Spending Reductions on Equipment in 2013," Center for Regional Analysis, George Mason University, October 24, 2011, available at http://secondtonone.org/wp-content/uploads/2012/05/AIA-Impact-Analysis-plus-State-Impacts1.pdf The Fuller study has its own flaws, as noted in Benjamin Zycher, "The Economic Effects of Reductions in Defense Outlays," Cato Institute Policy Analysis No. 706, August 8, 2012, pp. 5-11, available at http://object.cato.org/sites/cato.org/files/pubs/pdf/PA706.pdf ; and William D. Hartung, "Minimum Returns: The Economic Impacts of Pentagon Spending," Center for International Policy, February 7, 2013, pp. 4-7, available at http://www.ciponline.org/images/uploads/publications/Hartung_IPR_0113_EconomicImpactsPentagonContracting_FINAL_02-04-13.pdf

[6] Hearings Before the Senate Committee on Banking and Urban Affairs, on "Emergency Loan Guarantee Legislation," part 1, Washington, DC, June 7-16, 1971, p. 24.

[7] David E. Rosenbaum, "Lockheed Vote Was the Center of Battle of Lobbyists," New York Times, August 8, 1971.

[8] For a more detailed analysis of the fight over funding for the F-22, see Chapter 1, "The Rise and Fall of the Raptor," in William D. Hartung, Prophets of War: Lockheed Martin and the Making of the Military-Industrial Complex (New York: Nation Books 2012), pp. 1-18. The Senate roll call vote on whether or not to extend the F-22 program is detailed here: http://www.opencongress.org/vote/2009/s/235

[9] Merrill Goozner and Jennifer Depaul, "House Kills F-35 Jet Engine Backed by Boehner," Fiscal Times, February 16, 2011.

[10] For the original roster of members of the Joint Strike Fighter caucus see "Granger, Dicks, Announce Joint Strike Fighter Caucus," November 9, 2011, available at http://kaygranger.house.gov/press-release/granger-dicks-announce-congressional-joint-strike-fighter-caucus The original caucus co-chair Rep. Norm Dicks (D-WA), is no longer in the Congress. As noted above, his position as co-chair has been taken by Rep. John Larson (D-CT).

[11] "Congressman Jim Bridenstine Joins F-35 Caucus," press release, September 5, 2013, available at http://bridenstine.house.gov/media-center/blog-posts/congressman-jim-bridenstine-joins-f-35-caucus

[12] See profile of Buck McKeon in the Center for Responsive Politics' "Open Secrets" data base, available at http://www.opensecrets.org/politicians/industries.php?cycle=2014&type=I&cid=N00006882&newMem=N&recs=20

[13] In a local news article about possible nationwide furloughs, the 6,000 figure for employees working on the F-35 in Fort Worth was cited: Yamil Berard and Steve Kaskovich, "Lockheed Martin to Furlough 3,000 Workers in the U.S.," Fort Worth Star-Telegram, October 4, 2013, available at: http://www.star-telegram.com/2013/10/04/5220821/lockheed-martin-to-furlough-3000.html

[14] The original nine partner nations for the F-35 program include the United States plus Australia, Canada, Denmark, Italy, Netherlands, Norway, Turkey, and the United Kingdom, available at https://www.f35.com/global

[15] Ju-Min Park and Joyce Lee, "South Korea to Buy 40 Lockheed F-35s, Further 20 Jets Still Open," Reuters, November 22, 2103, available at http://www.reuters.com/article/2013/11/22/us-korea-fighters-idUSBRE9AL09520131122

[16] Aaron Mehta, "Lockheed, Mitsubishi Sign F-35 FACO Deal," Defense News, June 21, 2013, available at http://www.defensenews.com/article/20130621/DEFREG03/306210017/Lockheed-Mitsubishi-Sign-F-35-FACO-Deal

[17] Lockheed Martin, "F-35 Italy – Industrial Participation," available at http://www.lockheedmartin.com/us/products/f35/global-partnerships/f-35-italy.html

[18] John Shiffman and Andrea Shalal-esa, "U.S. Waived Laws to Keep F-35 on Track with China-made Parts," Reuters, January 3, 2014; and Agence France-Presse, "U.S. Probes Honeywell Over F-35 Sensor Made in China," run in Defense News, January 13, 2014.

[19] Data on campaign contributions is from the Open Secrets database maintained by the Center for Responsive Politics. The Center's figures include contributions by company Political Action Committees (PACs) and individuals associated with the company in question. Contributions by major companies are most easily accessed via the following page: http://www.opensecrets.org/industries/contrib.php?ind=D&cycle=2014

[20] Data from Open Secrets at http://www.opensecrets.org/politicians/contrib.php?cycle=2014&cid=N00006882&type=C&newmem=N and http://www.opensecrets.org/politicians/contrib.php?cycle=2012&type=C&cid=N00006882&newMem=N&recs=20

[21] Contribution data are taken from the Center for Responsive Politics' "Open Secrets" web site. Figures include both direct contributions to the members' campaigns and contributions to their Leadership PACs, which are used to donate to other members in an effort to increase the political leverage of the member operating the Leadership PAC.

[22] Non-governmental organizations that have at one time or another suggested cutting or canceling the F-35 as one approach to addressing the deficit include : the American Enterprise Institute (AEI), the Cato Institute, the Center for American Progress, the Center for a New American Security, the Center for Strategic and Budgetary Assessments, the Center for Strategic and International Studies, the Domenici-Rivlin debt reduction task force, the National Taxpayers Union, the Project on Government Oversight, R Street, the Sustainable Defense Task Force, Taxpayers for Common Sense, and the Task Force for a Unified Security Budget. Some organizations have not so much advocated the end of the F-35 program as pointed out that it might have to be terminated under certain budgetary scenarios. For example, a joint report by the Center for Strategic and Budgetary Assessments, the Center for Strategic and International Studies, the Center for a New American Security and the American Enterprise Institute stated that "If the Pentagon decided to meet sequester requirements by preserving force structure, without accepting reductions in readiness or the civilian work force, the Joint Strike Fighter program would have to be canceled." See Center for Strategic and Budgetary Assessments, "Think Tanks: Cancelling F-35 Among SCMR Options," August 5, 2013, available at http://www.csbaonline.org/2013/08/05/think-tanks-cancelling-f-35-among-scmr-options-2/

[23] Figures are from a Government Accountability Office analysis of Department of Defense data, cited in Winslow Wheeler, "F-35 Price Fixing: On Final Approach to Fighter Fiscal Sanity," Time magazine's "Battleland" blog, June 7, 2013, available at http://nation.time.com/2013/06/07/on-final-approach-to-fighter-fiscal-sanity/ The article is part of a five-part analysis of F-35 costs.

[24] On the costs of the new bomber, see David Axe, "Will the $55 Billion Bomber Program Fly?," Center for Public Integrity, March 26, 2012, available at http://www.publicintegrity.org/2012/03/26/8498/will-55-billion-bomber-program-fly

[25] Cited in Nick Schwellenbach, "Cancel the Flawed F-35 and Free Up Billions for Better Aircraft and Domestic Needs," Center for Effective Government, September 10, 2013, available at http://www.foreffectivegov.org/cancel-flawed-f-35-and-free-up-billions-better-aircraft-and-domestic-needs Schwellenbach's piece offers a succinct overview of the problems with the F-35, as does Winslow Wheeler in "The Jet That Ate the Pentagon," Foreignpolicy.com, September 4, 2012, available at http://www.foreignpolicy.com/articles/2012/04/26/the_jet_that_ate_the_pentagon#sthash.LmU6sjBk.dpbs

[26] Congressional Budget Office, "Options for Reducing the Deficit," November 13, 2013, available at http://www.cbo.gov/budget-options/2013/44766

[27] For more on the Pentagon's Office of Economic Adjustment, see Institute for Policy Studies, "New Tools for Defense Community Transition," available at https://mail.google.com/mail/u/0/?shva=1#search/miriam%40ips-dc.org/1426d94000ab473e?projector=1

[28] See "An Act Concerning the Commission on Connecticut's Future," available at http://www.cga.ct.gov/2013/act/pa/2013PA-00019-R00SB-00619-PA.htm

[29] For a comprehensive analysis of existing and proposed solutions to the defense transition problem, see Miriam Pemberton, "Framework for Defense Transition Assistance," Institute for Policy Studies, 2013, available at http://www.ips-dc.org/resources/Framework-for-Defense-Transition-Assistance.pdf

[30] See Robert Pollin and Heidi Garrett-Peltier, op. cit., note 3.

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