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FROM RUSSIA, WITH THRUST

Why the Pentagon shouldn't be fooled into buying more Russian rocket engines.

BY RON WAHID

Sanctions by the U.S. and European Union have left Russian President Vladimir Putin strapped for cash, but he's still got a summer surprise up his sleeve — and it won't come cheap. Putin has reportedly amassed more than 50,000 troops on the Russia-Ukraine border and is sending a large amount of heavy armor and artillery back to the front lines in preparation for what could be an attempt to seize more Ukrainian territory. The U.S. government is well aware of President Putin's ambitions. The nominee to be the next chairman of the Joint Chiefs of Staff testified in Congress earlier this month that Russia represents the greatest threat to U.S. national security. So, why exactly is the U.S. considering footing up to $300 million of the bill — enough to buy 75 more Russian T-90 tanks to position along the Ukrainian border — for Russia's military expansion?
This is the geopolitical backdrop as Congress debates the use of the RD-180 Russian rocket engine in

U.S. space launches as part of the National Defense Authorization Act, now being conferenced in the House and Senate.

The United States depends on space to conduct nearly all of its military operations. Yet since 2000, we have unwisely relied on Russian rocket engines for a large part of our national security space launches. The U.S. Air Force manages these launches through the Evolved Expendable Launch Vehicle (EELV) Program, and they initially selected Boeing and Lockheed Martin to provide these capabilities. Boeing offered the Delta IV, which uses American-made rocket engines built in California, and Lockheed offered the Atlas V, which uses the RD-180 rocket engine. These two providers merged their rocket businesses in 2006 to create the United Launch Alliance (ULA) joint venture and continue to operate the Delta IV and Atlas V today, which until recently maintained a costly monopoly on this program.

The RD-180 engine on the Atlas V is manufactured and sold by NPO Energomash, a company that is entirely state-owned and financed by Russian banks sanctioned by the U.S. as part of Russia's efforts to annex Ukraine and Crimea. Two of the few individuals on the U.S. sanctions list are heavily involved in the development and sale of RD-180 engines: The head of the Russian space program, Deputy Prime Minister Dmitry Rogozin, and Yuri Kovalchuk, one of Putin's closest associates and his purported "personal banker."

Russia has threatened to immediately end all sales of the engine to the U.S., but it also stated it wants to continue these sales in an effort to fund its military modernization. Neither option is good for American national security. Last year, as part of the 2015 National Defense Authorization Act, Congress banned the use of the RD-180 engines after 2019 and allocated $220 million for the development of a replacement engine. This bill allows ULA to use Russian rocket engines for all existing contracted missions during this period, plus an additional five more for missions yet to be offered to industry.

The Air Force is lobbying alongside ULA to circumvent the ban, claiming that a new, reliable, American-made engine will not be ready before they run out of RD-180s.

The problem with their argument is that the U.S. does not require a single Russian rocket engine beyond the 2019 ban. The Delta IV, which uses American propulsion, is not affected by the ban and is actually more powerful than the Russian-powered Atlas V. There's now also one other company certified for military space launches—the ULA competitor SpaceX, the private venture owned by billionaire Elon Musk. The company had a perfect success record with its Falcon 9 rocket until a recent launch mishap on June 28. Those who wish to see the U.S. order more RD-180s are using this incident as ammunition.

Congress recently passed two separate bills reauthorizing Pentagon programs for next year and is now in the process of

reconciling the two in conference. Current law allows for five additional Russian rockets, which would cost $117 million. The Senate bill allows for as few as five Russian engines (for the same $117 million) and at most nine (for a maximum of $210.6 million), and it affirms the 2019 cutoff. The House bill allows for an additional 14 Russian engines for U.S. military use, nearly tripling what existing law permits, and it would allow use beyond the 2019 deadline. If the House bill prevails, it would represent $327.6 million of U.S. taxpayer money going directly to the Russian government well into the middle of the next decade.

Last month, the SpaceX's Falcon 9 rocket—carrying over 4,000 pounds of supplies for the International Space Station—broke apart two minutes and 19 seconds after taking off from Cape Canaveral in Florida. Supporters of the Russian-built RD-180 are trying to leverage this unfortunate event to extend the Defense Department's reliance on Russian rocket engines. But this line of argument is short-sighted and mistaken.

The recent loss is no reason to dismiss SpaceX's Falcon 9 rocket, nor is it a testament to U.S. launch capabilities. In fact, as others have pointed out, an Orbital-ATK rocket, powered by a Russian engine, exploded on the pad during a similar NASA launch last October, and a Russian cargo-re-supply run failed after experiencing a problem with the rocket's second stage. Russia is by far the world's leader in rocket problems.

In its first five years, the SpaceX Falcon 9 has had a success rate of 18 out of 19 missions —roughly 95 percent. The Atlas V had an equivalent record at the same stage in its history. In 2007 on the vehicle's ninth flight, an Atlas V inserted two classified National Reconnaissance Office (NRO) spacecraft into the wrong orbit as a result of an upper stage anomaly. Industry observers at the time characterized this as a mission failure. Even ULA's Delta IV rocket experienced a major problem in 2012 which grounded the system (and Air Force launches) for months. The Delta IV Heavy failed on its inaugural flight.

Getting into space is challenging. This is why the Air Force has a policy of requiring multiple launch systems be in the program in order to ensure they always have a way to get to space. However, this same policy is being perverted in an effort to support more purchases of Russian rocket engines. ULA wants to stop selling most launches on its Delta IV rocket, which uses an American engine – but it says it will still conduct "heavy-class" launches for the Air Force. Coincidentally, these "heavy-class" launches are just those that the Atlas V cannot perform. In so doing, it is creating the false impression that there is only one other launch provider, SpaceX, unless it is allowed to keep flying the Atlas V with its Russian engines indefinitely. This very notion ought to be heavily questioned by the Department of Defense and the Air Force.

While ULA says the Delta IV is around 30 percent more costly than the RD-180-powered Atlas V today, it has also said it could lower those prices with increased production. The Delta IV family represents a tried-and-true stopgap until other

American rockets and rocket engines come online. Blue Origin, a launch company founded by Amazon's Jeff Bezos, is developing a new propulsion system called BE-4 which it says will be flying by 2019; Aerojet Rocketdyne, which has decades of experience, says its AR-1 engine will be ready for flight in the same period. SpaceX too is unveiling a new launch system, called the Falcon Heavy, which promises to exceed the capacity of both the Delta IV and Atlas V.

ULA says it is worried about competing with the Delta IV, but one would think it would be competitive based on its reliability record, its full spectrum lift capability, and its long flight heritage, if not on price. The Delta IV is among most reliable rockets on the market — and the premium Congress pays to build them will bolster the U.S. economy, instead of funding Russian hegemony. And, at the end of the day, the question is not about how competitive ULA is; it's about how to minimize our risk to national security.

The choice is clear.

The U.S. must pick one of two causes to support financially: either that of a dangerous dictator with very real plans to reclaim the Soviet Bloc, or a sector of the American manufacturing industry that provides the economy with much-needed jobs.

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