

Lockheed Martin defends JSF's close-in

Jane's Defence Weekly

capabilities Date Posted: 13-Feb-2009

Key Points

<https://www.scribd.com/doc/261728653/lockheed-martin-defends-jsf-s-close-in-capabilities>

- The F-35 has little advantage over other aircraft in combat situations within visual range, Lockheed Martin has conceded
- However, the aircraft's superior stealth and situational awareness means it comfortably outperforms rivals in longer-range scenarios

Julian Kerr *JDW Correspondent*

<http://www.f-16.net/forum/download/file.php?id=20843&mode=view>
&

Fort Worth, Texas

<http://www.f-16.net/forum/download/file.php?id=20844&mode=view>

Lockheed Martin has defended the air-to-air capabilities of the F-35 Lightning II Joint Strike Fighter (JSF) while conceding that the aircraft's performance in combat within visual range (WVR) will only be marginally superior to that of its fourth-generation and advanced fourth-generation counterparts.

Briefing Australian journalists at Lockheed Martin's Fort Worth facility on 2 February, Jerry Mazanowski, senior manager of air systems in the company's strategic studies group, compared the air-to-air performance of the F-35 with that of the Eurofighter, Dassault Rafale, Saab Gripen, Boeing F/A-18 Super Hornet and Sukhoi Su-30MKI. He said that in a typical combat configuration carrying four internally stored AIM-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAMs), the F-35 was marginally faster than the Su-30MKI carrying eight beyond-visual-range (BVR) missiles and no external fuel tanks; and that it was faster than the Eurofighter, Gripen C, Rafale and F/A-18 carrying four BVR and two WVR missiles and a single external fuel tank (two in the Eurofighter's case).

On an air-to-air mission with a radius of 200 n miles, no external fuel tanks but the same missile load and a requirement to accelerate from Mach 0.8 to Mach 1.2 at 30,000 ft, the F-35 was shown coming second best.

With a requirement involving the same acceleration and the aircraft tasked for a 600 n mile 'out and back' mission, Mazanowski said the F-35 was "nothing stellar but certainly not an underperformer in this category".

When accelerating from Mach 0.6 to 0.95 - important if evading a surface-to-air missile or in combat with other aircraft - the F-35 showed a comparable performance to its counterparts.

Discussing maximum mission radius, Mazanowski presented an air-to-air mission profile in which all the aircraft took off with a weapon load, remained at high altitude and returned after about a

minute of combat. All but the F-35 and Su-30MKI were carrying three external fuel tanks.

Under this scenario, the Rafale had a maximum mission radius of 896 n miles, the F/A-18 816 n miles, the F-35 751 n miles, the Eurofighter 747 n miles, the Su-30MKI 728 n miles and the Gripen 502 n miles.

According to Mazanowski, the JSF joint programme office required the modelling to assume an F-35 engine at the end of its life with 5 per cent fuel degradation and a 2 per cent reduction in thrust. The counterpart aircraft were given the benefit of the doubt wherever platform and systems performance were not clear - as, for example, in the assumption that all five would have active electronically scanned array radars operational within five years.

Modelling based on operational experience and simulation showed that 72 per cent of future engagements would be BVR, 31 per cent would be at transitional range (between 8 n miles and 18 n miles) and 7 per cent WVR.

Mazanowski acknowledged that these figures did not take account of BVR engagements that might develop into WVR engagements.

Taking all salient aircraft characteristics into account and utilising the Brawler modelling and simulation tool, the F-35 showed a better than six to one relative loss exchange ratio while the other aircraft scored less than one to one. This was in a four-versus-four scenario against what Mazanowski described as a "threat aircraft in the not-too-distant future".

He attributed this almost entirely to the F-35's superior stealth and situational awareness.

In a WVR engagement, the differences in the capabilities of the various aircraft were barely measurable. Although the F-35 was assumed not to be carrying externally mounted short-range AIM-9X missiles to avoid increasing its radar cross-section, Mazanowski praised the short-range performance of AMRAAM.

"The WVR environment, once you get there, is very awkward and very lethal. We think the F-35 may have some limited advantage in situational awareness with its DAS [distributed aperture system] and hopefully there would be enough wingmen to work their way out of the situation," Mazanowski said.

He added: "One guy has a little bit of an advantage in WVR and can shoot first, but both folks end up not doing well."