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EID-370
Engineering Management
4/19/22

Skunk Works Response

The management presentation that I enjoyed most last class was Sam Shersher's presentation about *Skunk Works*, written by Ben Rich. Skunk Works was a small division within Lockheed Martin that was able to produce incredible results given their size and the lack of large funding. While the small size and the dire wartime tensions probably cause this to be an anomalous situation rather than an example of good management practices, it is still a fascinating case study with some lessons to teach.

Much of the focus of Sam's presentation focused around the F-117 Nighthawk stealth fighter. At the time, the US government did not believe that they could get past the USSR's iron curtain and resorted to using ICBM's rather than planes, due to the high failure rate of plane missions. Skunk Works, under the new leadership of Ben Rich, contested the conventional belief under the advice of mathematician and radar specialist, Denys Overholser. The development of the F-117 was very technologically interesting. For example, the theory about radar was based on the 1964 paper "Method of Edge Waves in the Physical Theory of Diffraction" by Soviet mathematician Pyotr Ufimtsev. However, implementing this theory caused issues with the aerodynamic stability of the plane.

The initial development of the planes was under a very tight budget due to the initial skepticism about the anti-radar technology. However, with only a tight $35 million budget, and in record time[1], Skunk Works was able to produce two demonstrator planes that showed the efficacy of the anti-radar design, and funding was able to significantly increase for stealth planes afterwards. The time and money invested in the F-117 due to the high-risk hypothesis paid off, and the F-117 eventually became Skunk Work's "cash cow."

1 Goodall, James C. (1992). "The Lockheed F-117A Stealth Fighter". America's Stealth Fighters and Bombers: B-2, F-117, YF-22 and YF-23. St. Paul, MN: Motorbooks International. ISBN 978-0-87938-609-2.

There are a few things to note about the management at play here. First of all, the entire project was based on a risky gamble, based on a scientific claim by an old paper. Luckily, the science was correct, and the technology was advanced enough to solve the aerodynamic stability issues. This somewhat follows the “scientific management” school of management that shows the willingness of managers to counter conventional wisdom using scientific studies. It also shows the importance of quickly generating a proof of concept (PoC) or minimum viable product (MVP) to the larger funding entity (the government), so that the funding and support for such a project will increase.

Of course, since this was essentially a dream team of American engineers and scientists, this is not representative of your average American firm or management style. Also, the team regularly worked 60 hour weeks on this project in order for it to take off. So rather than being an example of what a good management style is, it may be better to say that this is a good example of what is possible with a small talented team that is motivated towards a common goal. It contrasts to the much more organized engineering management styles that we’ve discussed in class. In this case, a bureaucratic system of management would only hamper the rapid development and prototyping process, and a small, matrix-like, close-knit team of specialists is enough to develop the highly advanced product.

In addition to the F-117, Skunk Works was also able to develop the U-2 stealth aircraft and the SR-71 Blackbird, which is still the fastest (non-spacecraft) vehicle. Undoubtedly, this risky management style must have played a large role in allowing for such success.