Legends Of Flight
Episode 1: The First U.S. Jet Flight

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May 4, 2004
December 7, 2004

NARRATION SCRIPT

1. Muroc Dry Lake, situated in California's Mojave Desert. Sixty-five square miles of hard-packed, alkali-laced sand, rock and scorching heat. The death-still air had been mostly silent here. But the silence would not last.

2. This desolate, isolated section of America was chosen to play a historic role in shaping the world's technological future. This is the story of the heroes who worked on a top-secret project in this barren setting - the XP-59A Airacomet - the first jet airplane flown in the United States.

3. At the end of July 1941 the Bell Aircraft Corporation was awarded a special contract by the United States government. At the time, Jack Russell was working in the Flight Research hanger at the Bell plant in Niagara Falls, New York.

4. Russell, along with most of the other Bell staff who attended the meeting, accepted the assignment. This select group eventually went to work at a four-story building in Buffalo that Bell leased from the Ford Motor Company.

5. It had been a long journey for jet propulsion to reach this point of development. Developed by Sanford A. Moss of the General Electric Company around 1902, gas turbines were principally used in the hydro-electric industry. Airplanes were powered by gasoline-fueled piston engines.

6. It would be 1939 before that opinion was forcibly challenged. Across the globe, in Marienehe near the north coast of Germany, a history-making event was taking place. It was no accident that this event went unnoticed by the world; it was highly secret.

7. Early on a Sunday morning, August 27, 1939, a Luftwaffe test pilot taxied a small airplane along the runway of a private airfield. The experimental plane, the Heinkel He178, was fitted with a new type of engine designed and built by a University of Goettingen aerodynamics student, Hans von Ohain.

8. Powered by von Ohain's Heinkel S-3b turbojet engine, the Heinkel airplane roared down the runway and soared into the sky. It was the world's first flight of a jet propelled aircraft.

9. In Italy, the jet-powered Caproni-Campini CC2 airplane was built and flown in 1940.

10. Neither the German nor the Italian jet engines proved practical. But in Britain, RAF officer Frank Whittle soon developed a more successful design.

11. Whittle found that no one was interested in his patent. But by 1935 he had finally managed to gather a few private investors.

12. Finally, in May 1941, the Gloster E28/39, powered by Whittle's engine, became the first British aircraft to fly under jet propulsion. One of the first Americans to learn of the British jet plane was General H.H. "Hap" Arnold.

13. Only five days after the first flight of Germany's Heinkel HE178, Hitler's armies invaded Poland. General Arnold had already received intelligence reports of German research in reaction propulsion.

14. By 1941, with America on the brink of war, General Arnold knew it was critical that the United States pick up its pace in developing gas turbine technology for aeronautical use. Returning to the United States in May, he immediately enlisted the State Department in arranging for an exchange of information regarding gas turbine technology between the U.S. and Britain.

15. Arnold orchestrated historic meetings that took place both in England and the United States. Present were key personnel from the British and United States military, representatives of Power Jets Ltd., the manufacturer of the Whittle engine, and representatives of General Electric, the American leader in gas turbine research.

16. By the end of July, monumental progress had been made. General Electric would be contracted to build fifteen gas turbine engines based on the Whittle design. And Bell Aircraft Corporation was selected to build three airplanes as quickly as possible.

17. The manufacturers would have to work with incredible speed, and due to the top secret nature of the project, without outside advice.

18. Under tight security at General Electric's Lynn River facility in Massachusetts, a team of GE engineers led by Donald Warner, began modifying Whittle's W1 engine. They built a prototype and on April 18, only 6 1/2 months after taking on the job, it was ready for a first test. Warner pushed open the throttle and the jet turbine roared to life. Producing about 1250 pounds of forward thrust, GE's Type I-A engine was a centrifugal, reverse-flow turbojet that made significant advancements over Whittle's original patent design.

19. In addition to Bell Aircraft's highly accomplished and imaginative engineering staff, the company had certain isolated facilities that would lend themselves well to the "SECRET" classification assigned to the project. And the Bell facilities in New York State were convenient to the General Electric headquarters in Massachusetts. Last, but not least, there was owner Larry Bell himself.

20. Bell's Chief Engineer, Harland Poyer, quickly chose a small engineering staff to oversee the secret project. With a sense of urgency, this elite team had to design a completely new type of airplane. They were also required to develop a fighter design that would be suitable for combat service.

21. Working from only one small free-hand sketch of the Whittle engine, this group of six men completed their proposal and constructed the wind tunnel model of the aircraft within the two-week time period. The plane was given the designation of a pusher-prop aircraft that had never made it off the Bell drawing board, the XP-59A.

22. General Arnold approved the proposal and on September 30, 1941, the contract to Bell Aircraft was made official. It included three XP-59A airplanes, one wind tunnel model and research data for a total price of $1,644,431. The contract called for the first airplane to be delivered only eight months from the date of contract approval. The work at the Ford building was carried out with swiftness and intensity.

23. Once Jack Russell's team had completed their work on the landing gear and wing assembly, they were sent upstairs to help with attaching the wings to the airplane's fuselage. It was only then that they saw the complete airframe for the first time.

24. The foreman explained that the project they had been working on was a jet propelled aircraft.

25. In May 1942 the Air Force advised Larry Bell that a test site had been selected for the XP-59A. Bell had already assigned his Chief Test Pilot, Robert M. Stanley, the task of establishing a flight test program for the airplane.

26. Stanley's career began at Douglas Aircraft in 1931. He received his Bachelor of Science Degree in Aeronautical Engineering from Cal Tech, and then spent the next four years as a Navy pilot. He joined Bell Aircraft in 1940.

27. As Bob Stanley worked to develop his flight test program, the GE Type I-A jet engines arrived at the Ford Building. First, one engine - and then, shortly thereafter due to slippage of the delivery schedule, the second engine. The final assembly of the airplane was no sooner accomplished, than work began to disassemble it for crating and shipment to California.

28. Bob Stanley chose several members of his flight research staff to accompany him two thousand miles across the country. At the time, Barney Oldfield was head of Bell's Flight Research Instrumentation group.

29. Bob Stanley and a small advance crew arrived at Muroc in August 1942. They found a hot, desolate setting with only three buildings.

30. Neither the airplane hanger nor the barrack was completely finished, but the hanger, being constructed by a civilian contractor especially for the XP-59A, is what concerned Stanley.

31. The rest of Bob Stanley's team left for California in September 1942.

32. The XP-59A, its wings on one flatcar and its fuselage on another, had departed for Muroc two days earlier on a slower moving freight train.

33. The GE engineers feared that the engine bearings might be damaged during the trip, a problem they believed could be overcome by slowly rotating the engines during transit. One of the engineers, Ted Rogers, came up with the idea of using a gasoline-powered air compressor to force air through the jet turbines. The force of the air against the turbine blades would rotate the engines and pump a protective flow of oil to the bearings. Of course, this meant that Rogers and another GE field engineer would have to travel with the airplane.

34. The GE team endured a week of uncomfortable quarters, filthy conditions, little sleep and hastily getting their food whenever an opportunity presented itself. Countless times they would make their way along the flat cars traveling at 60 miles per hour to make certain the ropes holding the XP-59A were secure and that the one-ton compressor was working properly.

35. No one in Jack Russell's group was prepared for what they found when they arrived at their destination on September 17th.

36. The only thing more foreign to the Bell and GE men than the desert location was the building where they would live – a two-story, wooden structure that was quickly christened "The Desert Rat Hotel."

37. On September 20th, the train carrying the XP-59A arrived in Barstow. The airplane was unloaded from the train and trucked to its new hanger at Muroc.

38. Working long, unusual hours in the isolated environment could be unnerving.

39. And the fact that there were also military guards patrolling the area – with guns – didn't help matters.

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42. The Bell and GE men worked around the clock in a harsh environment of searing heat, rattlesnakes and dust. The XP-59A was almost ready.

43. Larry Bell arrived at Muroc on September 30th, in time to see Bob Stanley make the first taxi tests. After completing some low-speed trials, Stanley proceeded to some high-speed runs in order to get a feel for the controls.

44. Stanley's notes on the first flight reported: "Duration of flight: 30 minutes. Throttle was applied promptly and acceleration during take-off appeared quite satisfactory… The first flight reached an altitude of approximately twenty-five feet."

45. But Larry Bell responded with a resounding "no."

46. On October 2nd the official first flight did take place. Some of the officials present that day included Harlan Poyer, E.P. Rhodes, Arthur L. Fornoff, R.A. Wolf and Herb Bowers from Bell Aircraft - Roy Shoults and Don Warner from General Electric, and Major N.D. Heenan of the British Air Commission.

47. At about one in the afternoon, Bob Stanley released the brakes and slowly opened the throttle. The XP-59A moved across the dry lake bed, slowly at first, but then quickly picking up speed. The wheels left the ground and the airplane climbed into the blue, desert sky. America's first jet had taken flight.

48. Ted Rogers, one of the GE field engineers who had accompanied the jet engine on its train trip across the country, described a "strange feeling" as he watched the flight. "Dead silence as it passed directly overhead. Then a low, rumbling roar, like a blowtorch, and it was gone — leaving a smell of kerosene in the air."

49. The official dignitaries weren't the only ones who watched the XP-59A's maiden flight.

50. Laurence C. "Bill" Craigie, Chief of Experimental Aircraft Projects for the Material Division, was present as the official witness for the Army Air Force. He watched as Bob Stanley made two historic flights.

51. Commenting on his flight, Craigie said, "I didn't get very high. I didn't go very fast. The most vivid impression I received, after a very long take off run, occurred at the moment we broke contact from the ground. It was so quiet." Colonel Craigie later recalled that back in the days of the XP-59A the test pilot business was a lot more informal.

52. Bob Stanley and his team spent the next few weeks making modifications and repairs to the XP-59A. On the last flight of October 2nd the airplane's landing gear had failed to completely retract. Correcting the problem required the fabrication of new parts for the landing gear system.

53. Two new I-A engines arrived from GE and had to be installed, as well. At the time, and for some time to come, the engine life was extremely short. When one of the newly installed engines repeatedly failed to start, the XP-59A received an unofficial nickname, "Miss Fire."

54. Finally, before the XP-59A flew again on October 30th, 1942, it was modified so that an observer could be carried in the nose section. A twenty-inch hole was cut in the upper fuselage skin. Then, a standard airplane seat and instrument panel were mounted in the area that was designed as a gun compartment.

55. The new jet engines required so many readings that even the best pilot would have difficulty absorbing and reporting all the data. The added observer cockpit was a necessary asset.

56. Stick forces were measured with a modified fish scale, and the static thrust of the engines with an industrial spring scale. Barney Oldfield describes flying as an observer in the XP-43, one of the jet airplanes that followed the XP-59A.

57. With the success of the first XP-59A flights, it became clear that there would be continued testing. The two remaining prototype airplanes would soon be coming out of the Bell Aircraft plant and they would require testing, as well. The men at Muroc were granted permission to send for their wives, providing that they lived off the base. Ruth Russell made the trip with Bernice Ryan, wife of Jerry Ryan, the base secretary.

58. No one was there to meet them when they got off the train. Ruth and Bernice couldn't help wondering if they'd made a mistake.

59. Maintaining secrecy remained a top priority. Whenever the XP-59A was out in the open for very long, the cockpit and engine nacelles were covered, and a fake propeller attached to the nose.

60. Family members were never granted access to the base but Ruth Russell remembers going there on one occasion to pick up her husband.

61. While Muroc waited for the other two XP-59A's to arrive from Bell Aircraft, testing continued on the first airplane. Bob Stanley was the driving force behind the tests.

62. The Muroc flight test team developed a sense of humor based around the unique nature of their work. This was especially evident on one occasion when they had special visitors.

63. The crew chief and the pilot, Tex Johnston, worked out a routine for the dignitaries.

64. Test pilot Jack Woolams started a Muroc tradition during a staff visit to Hollywood.

65. Derbies and cigars became fixtures at most Muroc staff meetings, and even found their way to social events off the base. At the Muroc Army Air Force Base located south of the secret test facilities, pilots were logging training hours in the P-38. They were briefed to stay out of the airspace over the dry lake bed. But occasionally, a P-38 pilot flying near the lake would spot a small, strange airplane climbing through the clouds.

66. On one occasion, pilot Jack Woolams made a point of being spotted. His disregard for secrecy involved a Halloween mask.

67. Several B-24's were flying near the lake bed when they were joined by another airplane. Needless to say, the B-24 pilots were surprised to see that the airplane had no propellers. But the even bigger surprise was the unidentified plane's pilot, a cigar-smoking gorilla wearing a derby hat.

68. By February 1943, the second and third prototype airplanes had arrived at Muroc. The number two XP-59A made its first flight with Frank Kelley at the controls. The plane had not been in the air very long when the cabin defroster malfunctioned and the cabin filled with smoke. Kelly immediately began a landing approach, cut the engines and made a dead-stick landing on the lake bed.

69. The three 'X' models continued to be flown at Muroc through 1943.

70. A factor that set the United States jet propulsion program apart from similar programs in other countries was that the Bell XP-59A prototype was designed with the plan of eventual production in mind.

71. In June 1943 The Army Air Force contracted with Bell Aircraft for the manufacture of one-hundred production-type P-59's. Larry Bell requested name suggestions from his employees for the new production models and "Airacomet" was eventually chosen. But as fate would have it, the military eventually concluded that the P-59 model was not suitable for combat service.

72. The Air Force terminated its contract with Bell after the completion of sixty-six aircraft and turned its attention to developing the Lockheed XP-80 designed by Kelly Johnson.

73. Two years after the XP-59A took to the air, news of its first flight was made public.

74. Even though the Messerschmitt Me 262, a German jet fighter, actually flew missions over Europe in 1944 and 1945, no two jet aircraft ever faced each other in combat during World War II. The wartime necessity for secrecy prevented the XP-59A project and the people associated with it from receiving the recognition and credit they deserved. But their contributions were tremendous.

75. The work these innovative and industrious Americans did at the Muroc test site laid the groundwork for an entirely new, technological world. The areas of computer assisted and hydraulically boosted flight control systems, weapons systems, and aero medical research and technology are just a few.

76. The Muroc test site would not be known as Edwards Air Force Base until 1949.