

scenarios employed by ACC were substantially improved to more accurately reflect the anticipated use of the aircraft in combat. These factors were all major contributors to the increased use of the flares, as well as the resulting strikes.

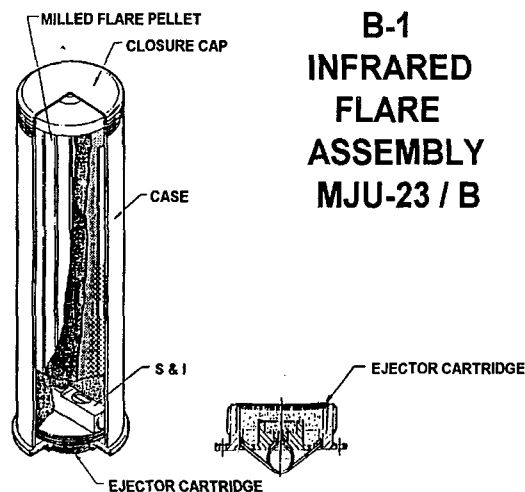


Figure 1: MJU-23/B Flare Used on the B-1B

The use of the MJU-23/B flare was unique to the B-1B program - no other weapon system in the world employed it. The cylindrical flare pellet alone weighed over 3.25 pounds. The flares were deployed from 8 dispensers located on the top of the aircraft, just aft of the crew compartment (see Figure 2). Each dispenser held 12 flares, for a total of 96 flares onboard the aircraft. The flares were loaded into individual canisters that were equipped with an ejection cartridge, as well as seals and covers to protect the pellet from the various environments in flight and on the ground. These canisters were then loaded into the dispensers in the backshops, and the dispensers were taken to the flight line for loading onto the aircraft. The flare design specification, created during the original B-1A program, dictated that the flare ejection velocity remain between 80 feet per second (fps) and 120 fps. The flares were characterized during sled track tests at Holloman AFB, NM in the early 1980's and flight tested successfully at Edwards in straight and level flight during the same period. None of these tests indicated any difficulty, but they were designed for a completely different criteria than the 1990's B-1B use dictated.

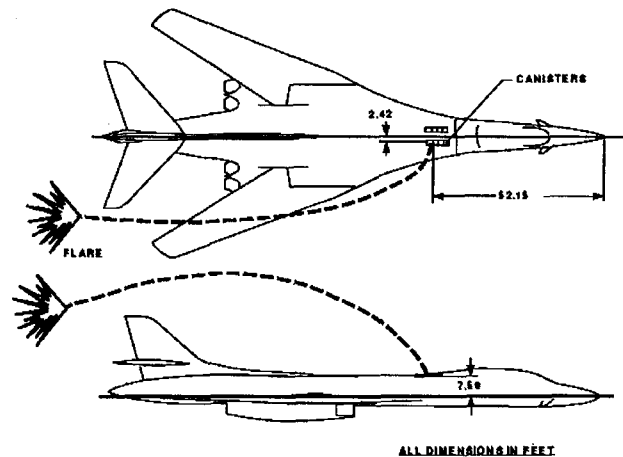


Figure 2: Flare Canister Locations on B-1B.

### Initial Flight Test Techniques

When the CTF originally received the request for flare testing from OC-ALC, they were only requested to evaluate a seemingly insignificant flare modification. Approval for such a test was obtained at the AFFTC. However, a secondary objective soon followed to evaluate flare trajectories, with a particular request to observe and record any minor damage to the aircraft during the three-flight program. The CTF investigated the background of this secondary request. This investigation illuminated the history of the flare strikes that was mentioned in the previous section. The project flight test plan was revisited and the CTF determined that this new objective took the project beyond both the technical and safety scope which had been originally approved. The plan was rewritten to include the investigative objective, but the CTF quickly realized the need for good supplemental information before they could safely attack the problem.

The CTF immediately requested support from NAWCWPNS for special camera systems to capture the flare trajectories. The specialists at NAWCWPNS used their recent flare testing experience to design and create a unique, self-contained, 2-unit camera system that was built inside an old flare dispenser. This package was mounted in the forward, left-hand dispenser bay of the B-1B flight test aircraft. A narrow field-of-view (NFOV) camera and a wide field-of-view (WFOV) camera were both mounted to provide maximum film coverage of the flare deployments. In order to maximize the vertical picture captured by the WFOV camera, it was mounted at a 90-degree offset from normal to take advantage of the long axis of the rectangular view. These cameras were specially