

LAUNCH THE ASSAULT DRONES!

THE NAVAL AIRCRAFT FACTORY'S TDN-1 WAS ONE OF THE SECOND WORLD WAR'S STRANGER COMBAT AIRCRAFT

BY HOWARD CARTER

PHOTOGRAPHS COURTESY NAVAL HISTORY AND HERITAGE COMMAND



Perched in the cockpit of TDN-1 BuNo 17308, Lt. C.C. Corley prepares to take the assault drone aloft for a piloted flight from Naval Air Station Traverse City, Michigan. Note how the Bureau Number has been crudely chalked on the cowls, fuselage, and vertical tail. The engines were fitted with fixed-pitch wooden propellers, which would have made handling difficult in case of an engine failure.

Lieutenant C. C. Corley was probably wondering what he had done wrong during his naval aviation career that would place him in the cockpit of the aircraft he would soon attempt to fly. Going through the abbreviated checklist, the young pilot soon had both Lycoming O-435-2 six-cylinder horizontally-opposed engines running and after making sure they were functioning properly, he released the brakes and began to gingerly taxi on the grass strip at Traverse City, Michigan. Advancing the throttles, the wooden airframe began to shake as it bounced across the turf. With speed increasing, Corley gently pulled back on the stick and the plane smoothly rose into the sky while anxious observers watched from the ground.

Corley had been assigned to a project on which the US government would spend millions of dollars while hoping to perfect a new weapons system that could be used against the enemy. The aircraft he was flying was the Naval Aircraft Factory (NAF) TDN-1 and it was part of

an extensive program to create what was then called an "assault drone" that could be utilized against reinforced targets with pin-point accuracy. Sometimes called "flying bombs," American military planners had seen how Germany was developing pilotless guided and unguided weapons and this caused a scramble to create something similar.

Designs would range from converted Liberators and Flying Fortresses to machines like the TDN and then to paper designs like a turbojet-powered pilotless flying wing. Developments in radar altimeters and television allowed

the concept of unguided weapons to move forward. In the panic following Pearl Harbor, the Naval Aircraft Factory was instructed during January 1942 to move ahead with developing such an aircraft and it was given the designation of XTDN-1. Around the same time, Interstate Aircraft and Engineering



Lieutenant Corley displays the TDN-1 in flight near NAS Traverse City. The design was supposed to be as simple as possible while the wood and other non-strategic materials used in construction would not hamper the production of combat aircraft. This view shows the broad wing to advantage.

Corporation, who had built a pre-war lightplane called the Cadet, was ordered to move forward with a similar design called the XTDR-1 (this machine will be covered in a future issue).

By 1935, far-thinking L/Commander Delmar S. Fahrney had sketched out a number of concepts for an unpowered remotely controlled aircraft that the Navy could utilize in combat operations as well as for targets. Obsolete trainers were modified to test the idea. It worked, but the equipment of the time period was bulky and unreliable. However, advancements in the technology would make the concept much more feasible.

The military wanted the aircraft to be low cost and constructed from non-strategic material and this meant wood. The initial XTDN-1 design was somewhat of a boxy affair with a slim fuselage and a broad wing. In the forward



The first TDN-1s were painted in two-tone camouflage. Bureau of Aeronautics serials were in the 17292 to 17391 range. In order to bring non-aviation companies into the war effort, Brunswick-Balke-Collender Company, a Michigan maker of bowling balls and billiard tables, license built the last 30 TDNs.



With its Grumman Duck control plane in formation, a TDN makes a run on the target barge and releases two bombs.



The bombs strike the water short of the target.



Other tests saw the bomb-laden TDNs flown directly into the target to test the effectiveness of such an attack.

fuselage, provisions were made for a pilot and rudimentary controls. The addition of a pilot was so the TDN could be flown to operational areas, at which time the windscreen and other items would be removed and replaced by a fairing. Also, the aircraft was fitted with a stalky tricycle gear that could be jettisoned once in flight.

With the urgency of war, the project moved ahead rapidly but there were many problems to conquer. It seems a

lot more thought should have been given to the overall concept and whether it could work in combat zone in a reliable and effective manner. On 17 June 1941, the Chief of the Bureau of Aeronautics wrote: "The Bureau is particularly desirous that the technique of operating offensive torpedo-carrying radio-controlled aircraft

be pressed to a conclusion and that sufficient flight tests of aircraft guided by television be carried out to permit recommendations for useful application of naval work."

Pace of the work was such that the NAF was given prototype approval (four XTDN-1s would be constructed) in February followed by an order for 100 aircraft in March. John S. Kean was given the title of project manager and it was his responsibility to make

sure everything came together to the Navy's satisfaction. As typical of almost any military aircraft contract, there were constant changes and the Navy wanted to plane to be guided either by television or radar systems. Also that June, the Bureau of Aeronautics (BuAer) stated that a minimum delivery rate of 300 assault drones per month would be necessary and that 500 per month would be preferable. Early BuAer correspondence specified the deployment of 18 squadrons in the initial attack phase of the program, using 162 control planes. This required 500 ready drones with an equal number in reserve. On 22 May 1942, the Vice Chief of Naval Operations wrote, "The need for this weapon is so urgent that the chiefs of the Bureaus addressed are requested to proceed with the indicated development and production as far as possible."

The four XTDN-1s were fitted with Franklin O-300 powerplants. This was a horizontally-opposed six-cylinder engine that was built either as direct drive or geared drive and was capable of producing 130 to 175-hp, depending on the variant. The powerplant was fitted to a variety of aircraft, most being experimental in nature. For example, the engine was installed in the Culver series of drones, the Erco XPQ-13, Hockaday Comet, Piper PT-1, and other planes that