

211 01 AIRCRAFT ACOUSTICAL ENCLOSURE (NON-NARF) (SF)

Description. During the aircraft maintenance and testing process, aircraft engines are run-up while aboard the aircraft (in-frame testing) and when removed from the aircraft (out-of-frame testing). In both cases, high noise levels are generated in surrounding areas unless sound abatement is provided. The aircraft acoustical enclosure, sometimes referred to as a hush house, is a total enclosure for fixed wing aircraft designed to abate noise during in-frame run-up of jet engines. The facility consists of a hangar-like aircraft enclosure, an absorbtive augmenter for inducing cooling air and absorbing noise, a 45 degree blast deflector, and observation room with lavatory and a mechanical equipment room. The observation and mechanical rooms are located adjacent to, not within, the aircraft enclosure.

Policy. This category code shall be used for acoustical enclosures which support organizational and intermediate level aircraft maintenance. Enclosures at Naval Air Rework Facilities (NARFs) supporting depot maintenance shall be coded as 211 98.

Criteria. The design of the acoustical enclosure is governed by the size of aircraft and the number and location of the engines. Standard designs are under development. The hangar like enclosure varies in width from-80 to 55 feet and in length from 85 to 65 feet while the length of the augmenter varies from 75 to 90 feet.

The Navy has operated only one hush house (NAS Miramar) long enough to collect meaningful data. These planning guidelines were developed from analysis of the Miramar data. On the average, 0.49 aircraft arrived per hour to use the hush house during the peak workload hours (0800-1600) and the average service time in the hush house was 1.1 hours. The hush house operated approximately a 20 hour day. Using these parameters and assuming that all high power run-ups will be done in the hush house, one hush house can support 140 jet aircraft and 2 hush houses up to 360 jet aircraft. (These planning factors are general guidelines which reflect NAS Miramar service times and aircraft mix.)

A variation to the basic enclosure, a "hybrid" enclosure has been designed in which both in-frame and out-of-frame testing may be performed. Out-of-frame testing is usually done in an engine test cell, Normally, it would not be cost effective to conduct out-of-frame testing in a hush house when it would result in the requirement for an additional hush house to support the out-of-frame testing. The hybrid hush house should be considered where (1) the facility is used as a backup facility to existing test cells and out-of-frame runups do not involve time consuming maintenance or (2) where in-frame utilization levels are expected to be below the hush house capability, thereby leaving excess availability for out-of-frame runups.

The enclosure provides a better Working environment than open pads by providing protection from inclement weather and cross winds which adversely effect the testing of engines, while at the same time significantly reducing exterior noise levels. NAVFAC P-970, Planning in the Noise Environment specifies acceptable noise levels for various land uses. Noise levels generated during engine run-ups, if not abated, could: (1) restrict land use, (2) require that sound insulation be installed in nearby buildings, or (3) require the run-up pad to be located at a considerable distance from inhabited buildings. The latter results in increased fuel consumption and lost time while transiting to and from the run-up area. In addition, noise generated during run-ups can result in complaints from civilian communities resulting in local pressure to restrict operations. As indicated by P-970, the total noise environment must be evaluated and the hush house considered as one possible solution to reducing noise levels. Most air installations have had detailed noise studies done as a part of the Air Installations Compatible Land Use Zones (AICUZ) program. AICUZ studies address solutions to noise problems and may serve as a basis for justifying the requirement for an acoustical enclosure. The number of hush houses can be determined using the guidelines provided herein. Until definitive drawings are published, information as to hush house size shall be obtained from Headquarters, NAVFACENGCOM.

211 02 NOSE HANGAR (SF)

The hangar provides limited protection for aircraft undergoing maintenance. The facility usually includes a canopy which covers the aircraft nose and engines, a service platform, and an enclosed shop area. Nose hangars are designed for the specific type of aircraft supported.

211 03 CORROSION CONTROL HANGAR (SF)

The corrosion control hangar provides space for washing, rinsing, paint stripping, corrosion removal, protective coating and painting of aircraft at the intermediate maintenance level. The hangar along with aircraft washracks (Category Code 116 10) and rinse facilities (Category Code 116 15) support the corrosion control program as described in Technician Manual NAVAIR 01-1A-509, Aircraft Cleaning and Corrosion Control for Organizational and Intermediate Maintenance Levels. Depot level maintenance facilities for stripping and complete repainting of aircraft shall be coded as 21112, Paint and Finishing Hangar.

The corrosion control hangar may be required at Navy and Marine Corps activities having aircraft subject to accelerated corrosion due to flight operations over water or the presence of a corrosive atmosphere at the station itself. The requirement for a corrosion control hangar should be endorsed by the cognizant type Commander and the Naval Air Systems Command prior to approval for planning purposes, Because of the high initial cost, extraordinary corrosion problems must exist to justify programming this hangar.

Two standard size corrosion control hangars are shown in NAVFAC P-272, definitive drawings: (Definitive drawings are currently under revision,)

Type A - For carrier and other aircraft with wingspans up to 70 feet: gross area, 11,152 SF

Type B - Primarily for land based patrol aircraft with wingspans up to 110 feet: gross area, 25,172 SF

Multiple hangars should not be planned unless the expected work load would exceed the capacity of a single hangar operating a 24 hour day. An average of one aircraft can be processed each 24 hour period, If additional hangars should be required, the number can be determined based on a 24 hour work day capability of one hangar and local records of the frequency of painting or the need for additional capability because of deployment schedules.

For design criteria see NAVFAC DM-28.1 and P-272. Strong consideration shall be given to industrial safety and environmental considerations as toxic paints are involved. For pavement requirement see category codes 113 40 Aircraft Access Apron and 852 10 Parking Area.

211 04 PRE-ENGINEERED MAINTENANCE HANGAR (SF)

The pre-engineered maintenance hangar provides an austere facility for organizational level maintenance of Navy and Marine Corps aircraft. It is intended for use primarily at overseas locations, particularly those where tenure may be limited. When provided, the pre-engineered hangars are programmed in lieu of, not in addition to, the larger standard Type I and II hangars (Category Codes 211 05, 211 06 and 211 07).

The pre-engineered maintenance hangar is intended for the support of a

detachment size unit of from three to five aircraft. NAVFAC P-272 contains definitive designs for three sizes (Types A, B and C). Each hangar consists of a hangar bay (OH) space and limited crew/equipment (01) and administrative (02) space. Movable partitions are provided within the crew/equipment and administrative space to facilitate configuring these areas in accordance with the requirements of the occupant.

The specific type of hangar to be selected is dependent on the size of aircraft to be maintained.

Type "A" Hangar - This hangar is designed primarily for attack (VA) and fighter (VF) aircraft and helicopters. It may also be utilized for antisubmarine (VS) and early warning (VW) aircraft or smaller transport (VR) aircraft with wingspans less than 85 feet. Gross Area = 8800 SF, Width = 105 FT and Depth = 80 FT.

Type "B" Hangar - This hangar is designed primarily for shore based patrol (VP) aircraft and transport (VR) aircraft with wingspans up to 100 feet. Gross Area = 14,700 SF, Width = 120 FT and Depth = 120 FT.

Type "C" Hangar - This hangar is designed primarily for (K)C-130 aircraft but may also be configured to accommodate other large transport aircraft (wingspans up to 132 feet). Gross Area = 21,466 SF, Width = 150 FT and Depth = 140 FT.

See NAVFAC P-272 and DM-28.1 for design criteria.

211 05 MAINTENANCE HANGAR - OH Space (SF)
211 06 MAINTENANCE HANGAR - 01 Space (SF)
211 07 MAINTENANCE HANGAR - 02 Space (SF)

Criteria is currently under review. For further info please contact criteria manager at 757-322-4871.