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AUG 1 2001

From: Commandant
To: Commander, Atlantic Area (m)
Commander, Pacific Area (m)

Subj: WING-IN-GROUND (WIG) CRAFT INTERIM GUIDANCE

Ref: (a) COMDT COGARD WASHINGTON DC//M// 271932Z APR 01

1. Reference (a) requested feedback on the size and scope of the of wing-in-ground (WIG) craft industry within each COTP zone. Review of this feedback indicated that while all known WIG craft operations are limited to prototype testing and feasibility studies, there are manufacturers with operating WIG craft who are planning or may plan to start up commercial operations. Most of the activity has been concentrated in New England, the Caribbean, and the barrier islands of Georgia. Additionally, there have been inquiries about operations in Hawaii, California, and the Hampton Roads area. Based on this information, we have established the following interim guidance for WIG craft operation.

2. A WIG craft is defined as a vessel capable of operating completely above the surface of the water on a dynamic air cushion created by aerodynamic lift due to the ground effect between the vessel and the water's surface. WIG craft are capable of operating at speeds in excess of 100 knots. WIG craft's unique operation poses unknown and potentially significant risks to its occupants and existing commercial and recreational traffic. Because of safety concerns related to the design, construction, and operation of WIG craft and the unique concerns they create on U.S. waterways, the Coast Guard drafted legislation that will require WIG craft carrying even one passenger for hire to be inspected as a small passenger vessel under 46 CFR Subchapter T. This draft legislation has been submitted to OMB for approval for forwarding to Congress. The goal is for this legislation to be passed this calendar year.

3. Presently, there are no Coast Guard safety standards for WIG craft. The Coast Guard has started the process of developing safety standards that will address the design, construction, operation, licensing and maintenance of WIG craft with further assistance from the Federal Aviation Administration. Additionally, the United States is working with the International Maritime Organization (IMO) to develop international standards for WIG craft.

4. The Coast Guard has an obligation to prevent operation of WIG craft if the craft and operation poses an unacceptable level of risk. A manufacturer, owner and/or operator, who proposes to operate a WIG craft, must demonstrate that an acceptable level of safety is provided and it must be based on an engineering analysis of the design and comprehensive testing in a controlled environment. In order for the Coast Guard to determine that specific WIG operations

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do not pose unacceptable risks or create especially hazardous conditions, the manufacturer, owner, and/or operator shall provide the COTP/OCMI the below information for use in a Coast Guard determination of the acceptability of the proposed operation. In the absence of the below information, the COTP/OCMI should take action as appropriate including but not limited to issuance of a COTP Order and termination.

a. Detailed written proposal of planned operation including route, times, nature of operation. The proposal must identify specific geographic areas where the WIG craft would take-off, land, and operate in the ground effect. The plan should also establish environmental parameters (temperature, wind, wave height, minimum visibility) as well as the operational parameters, such as the minimum distances from other vessels that the WIG craft intends to maintain when taking off, landing and operating in the ground effect. The operational plan should also outline how other waterway users will be informed of WIG craft operations.

b. Design and engineering calculations including:

(1) Proof of sufficient structural integrity in both the afloat and airborne modes to withstand static and dynamic loads for the anticipated worst case operating conditions;

(2) A Failure Mode Effect Analysis similar to guidance provided in enclosure (6) of NVIC 5-93, that includes the structure, the control system, and the propulsion system at a minimum;

(3) A listing of all design and construction standards used in the craft;

(4) Calculations used to determine the maximum safe wave heights for takeoff, landing, and operation in both the waterborne and airborne modes;

(5) Longitudinal and vertical centers of gravity and an analysis of the craft's sensitivity to changes in those centers of gravity;

(6) Analysis of aerodynamic forces acting on the craft;

(7) Safety measures for protection of the occupants against crashes, collisions, fires, sinking, capsizing, and explosions.

c. Proof testing data including a summary of all test runs conducted to date;

d. Results of a comprehensive risk analysis for the proposed operation including a summary of all potential risks and a description of how the risks will be mitigated. The risk analysis must address risks inherent in the WIG craft itself, risks the WIG craft could present to other waterborne traffic, and risks that other waterborne traffic could present to the WIG craft. It should include input from the commercial and recreational vessel operators who can reasonably

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be expected to be impacted by the WIG craft operation. The risk analysis must include documentation demonstrating the effects of mitigation measures using a causal chain approach;

e. Proof that each proposed operator possesses a valid license issued by the Coast Guard authorizing service as an Operator of Uninspected Passenger Vessels (OUPV) or master of appropriate route and tonnage. Additionally, documentation must be provided that details the training and experience of each proposed operator including:

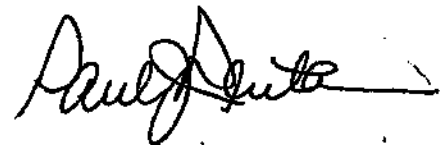
- (1) Number of hours of operation in the proposed craft, an identical craft and/or other, non-identical WIG craft;
- (2) Experience over the proposed route;
- (3) Completion of a company training program;
- (4) Evidence of additional applicable licenses (seaplane operator, private pilot, etc.)

f. A detailed maintenance plan for the craft that includes all machinery, the structure, aerodynamic surfaces, the fuel system, control systems and all safety systems. The maintenance plan must include a training program for the maintenance crew.

5. The Coast Guard may consider allowing WIG craft operations of an experimental nature or for demonstration purposes providing no persons are carried other than those necessary and qualified to operate the craft. For experimental and demonstration operations, only information listed in paragraphs 4.a, 4.c, and 4.e above should be required prior to operations. Additionally, a less detailed risk assessment than described in 4.d. should be required addressing risks the WIG craft presents to other waterborne traffic. Equivalent qualifications to those listed in 4.e may be proposed and will be considered on a case-by-case basis.

6. Due to the complexity of WIG craft and the relatively new nature of these types of vessels, the COTP/OCMI shall forward proposals for WIG craft operation to Commandant (G-MSE) with recommendations and/or concerns regarding the proposed operation. Commandant (G-MSE), in conjunction with the COTP/OCMI, will evaluate any proposed WIG craft operation to determine if it poses an unacceptable level of risk with support from Commandant (MOC/MWV/MSO), the National Maritime Center, and the Marine Safety Center.

7. Questions or comments regarding the development of appropriate WIG craft standards should be referred to Commandant (G-MSE-1) at (202) 267-2997.



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and Environmental Protection