



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

APR 24 2012

Mr. Stephen M. Seiber
Chief, Natural Resources Section
Department of the Air Force
96th CDG/CEVSN
501 De Leon Street, Suite 101
Eglin Air Force Base, Florida 32542-5133

Dear Mr. Seiber:

Enclosed is a Letter of Authorization (LOA) issued to the U.S. Department of the Air Force (U.S. Air Force), under the authority of section 101(a)(5)(A) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*), as implemented by 50 CFR §§216.106 and 217.86-87, to take Atlantic bottlenose dolphins (*Tursiops truncatus*) incidental to the Naval Explosive Ordnance Disposal School (NEODS) training operations at Eglin Air Force Base, Florida.

You are required to comply with the conditions contained in the LOA and implementing regulations published at 50 CFR §§217.80-90. In addition, you must cooperate with any Federal, state or local agency monitoring the impacts of your activities, and submit annual reports and a draft comprehensive final report to the National Marine Fisheries Services (NMFS) Office of Protected Resources and Southeast Regional Office, no later than 180 days prior to the expiration of this LOA and regulations. A revised final comprehensive technical report, including all monitoring results during the entire period of the LOA, must be submitted 90 days after the end of the period of effectiveness of the regulations. This report shall summarize the activities undertaken and the results reported in all previous annual reports. Requirements for mitigation and monitoring are specified in the LOA and include among other things, the monitoring of marine mammals by qualified individuals before, during, and after all detonations, and reporting of all marine mammal observations, including species, number, and behavioral modifications potentially resulting from this activity.

If you have any questions concerning the LOA or its requirements, please contact Howard Goldstein or Jolie Harrison, NMFS, Office of Protected Resources, at 301-427-8401.

Sincerely,

Helen M. Golde
Acting Director
Office of Protected Resources

Enclosure



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APR 24 2012

Letter of Authorization

The U.S. Department of the Air Force (U.S. Air Force), 96 CDG/CEVSN, Natural Resources Section, 501 DeLeon Street, Suite 101, Eglin Air Force Base (Eglin AFB), Florida, 32542-5133, and persons operating under its authority, are hereby authorized to take marine mammals incidental to Naval Explosive Ordnance Disposal School (NEODS) training operations at Eglin AFB, Florida, in accordance with 50 CFR Part 217, Subpart I – *Taking of Marine Mammals Incidental to Naval Explosive Ordnance Disposal School Training Operations*, subject to the provisions of the Marine Mammal Protection Act (MMPA)(16 U.S.C. 1361 *et seq.*), the Regulations Governing Small Takes of Marine Mammals Incidental to Specified Activities (50 CFR Part 217.80-89, Subpart I), and the following conditions:

1. This Authorization is valid from April 23, 2012, through April 24, 2017.
2. This Authorization is valid only for the take of marine mammals specified in Table 1, by Level B harassment, incidental to the activities in 50 CFR §217.80 by U.S. Air Force's, Headquarters 96th Air Base Wing, Eglin Air Force Base, its contractors and clients conducting NEODS training operations and testing at Eglin Gulf Test and Training Range (EGTTR), within the Eglin Military Complex, at property off Santa Rosa Island, Florida, in the northern Gulf of Mexico, described in the 50 CFR 217.80(b) and Letter of Authorization application, *Request for a Letter of Authorization for the Incidental Harassment of Marine Mammals Resulting from Naval Explosive Ordnance Disposal School Training Operations, Eglin Air Force Base, Florida*. NEODS missions will occur over the next five years utilizing resources within the Eglin Military Complex, including test sites in the EGTTR.

The latitude/longitude of corners of test site W-151 in the EGTTR are:

30.24006 North°, -86.808838° West
29.539011 North°, -84.995536° West
28.03949 North°, -85.000147° West
28.027598 North°, -85.199395° West
28.505304 North°, -86.799043° West

The latitude/longitude of corners of test site W-151A in the EGTTR are:

30.24006° North, -86.808838° West
30.07499° North, -85.999327° West
29.179968° North, -85.996341° West
29.384439° North, -86.802579° West

3. Species Authorized and Level of Takes

- (a) The incidental taking, by Level B harassment only, is limited to the following species in the waters of the northern Gulf of Mexico:
- (i) Odontocetes – see Table 1 (attached) for authorized species and take numbers.
 - (ii) If any marine mammal species are encountered during NEODS training operations that are not listed in Table 1 (attached) for authorizing taking and are likely to be exposed to greater than or equal to Level B harassment thresholds listed in Table 2 (attached), then the Holder of this Authorization must postpone or stop the NEODS training operations to avoid take.
- (b) Prohibitions: this Authorization may be revoked, withdrawn, modified or suspended if any person in connection with the activities authorized in paragraph of this Letter of Authorization:
- (i) Takes by injury (Level A harassment), serious injury, or death of any of the species listed in 3(a) (above);
 - (ii) Takes of any kind of any other species of marine mammal;
 - (iii) Takes of marine mammals specified in Condition 3(a) above if such taking results in more than a negligible impact on the species or stock of such marine mammals;
 - (iv) Violates, or fails to comply with the terms, conditions, and requirements of this Letter of Authorization or 50 CFR §§217.18 and 216.106.
 - (v) Training operations shall be suspended if the conditions above regarding injury, serious injury, or death of a marine mammal during NEODS training operations are met.
- (c) The U.S. Air Force shall suspend NEODS training operations until it reinitiates consultation and obtains additional authorization for the take of marine mammals if:
- (i) A marine mammal is injured, seriously injured, or killed during NEODS training operations;
 - (ii) The injury, serious injury, or death could be associated with the NEODS training operations; and
 - (iii) After coordination and concurrence with NMFS, the U.S. Air Force determines that implementing supplementary monitoring and mitigation measures

are unlikely to reduce the risk of injury, serious injury, or death to a very low level.

4. The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the, Southeast Regional Administrator, National Marine Fisheries Service (NMFS), at 727-824-5312, and the Office of Protected Resources (NMFS), at 301-427-8401.

Contact information:

National Marine Fisheries Service
Southeast Regional Office
263 13th Ave South
St. Petersburg, FL 33701
Attention: Marine Mammal Branch

National Marine Fisheries Service
Office of Protected Resources
1315 East West Highway
Silver Spring, MD 20910

5. The Authorization for taking by Level B harassment is limited to the following acoustic sources without an amendment to this Authorization:

- (a) Mine Countermeasures (MCM) 5 pound (lb) (2.3 kilogram [kg]) net explosive weight (NEW) charge; and
- (b) MCM 10 lb (4.5 kg) NEW charge.

6. Mitigation and Monitoring Requirements

The Holder of this Authorization is required to implement the following mitigation and monitoring requirements when conducting the specified activities to achieve the least practicable adverse impact on affected marine mammal species or stocks:

- (a) The Holder of this Authorization for the activities specified in Condition 2 shall cooperate with NMFS, and any other Federal, state, or local agency with authority to monitor the impacts of the activity on marine mammals. The Holder shall also notify the Administrator, Southeast Region, NMFS, by letter or telephone prior to taking activities possibly involving the taking of marine mammals. If the activity specified in Condition 2 is thought to have resulted in the mortality or injury of any marine mammals or in any take of marine mammals not identified in Table 2, in addition to complying with the requirements of Condition 3(c) notify the Director, Office of Protected Resources, NMFS, or designee, by telephone (301-427-8400), within 24 hours of the discovery of the injured and dead animal.

(b) For NEODS training operations, areas to be used in missions shall be visually monitored by designated, trained, qualified, on-site individuals approved in advance by NMFS, for marine mammal presence from a surface support vessel prior to detonation of mine neutralization charges. Monitoring shall be conducted 30 minutes before missions to clear the mitigation-monitoring zone. Post-mission monitoring shall also be conducted for 30 minutes after the final detonation (concentrated on the area down current of the test site). If marine mammals are inside the mitigation-monitoring zone, detonations shall be postponed until they have left the area. Trained observers onboard support vessels shall be staged from the highest point possible. The observer on the vessel must be equipped with the proper optical equipment (e.g., binoculars) and lines of communication in order to recommend to the Officer in Tactical Command so that he/she can make the decision to move forward with the mission.

(c) Monitoring shall occur pre-mission (for 30 minutes), throughout the mission, and post-mission (for 30 minutes). Post-mission monitoring shall concentrate on the area down current of the test site.

(d) Survey clearance procedures shall be conducted using best operational methods possible. After the mitigation-monitoring zone is cleared, all dolphins and protected species indicators (e.g., *Sargassum* rafts) shall be avoided to the maximum extent possible.

(e) After conducting post-mission monitoring, NEODS training operations data as required by Eglin Air Force Base's Natural Resources Section, 96 CEG/CEVSN shall be reported. Post-mission monitoring shall commence immediately following each detonation and shall be concentrated on the area down current of the test site. If any injured or dead marine mammals are observed, that information will be reported and coordinated with marine animal stranding networks.

(f) NEODS missions shall be postponed if:

(i) The Beaufort sea state is greater than the Scale Number 3 described in Table 5 (below). Such a delay maximizes detection of marine mammals.

(ii) Large concentrations of fish, jellyfish, and/or large *Sargassum* rafts are observed within the mitigation-monitoring zone. The delay would continue until the fish, jellyfish, and/or *Sargassum* rafts that cause the postponement are confirmed to be outside the mitigation-monitoring zone.

The following visual monitoring requirements will be implemented for each NEODS mission (these requirements are based on the agreement between NMFS and the U.S. Navy for EOD activities conducted in water depths of 7.3 meters (m) (24 feet [ft]) or greater):

- (g) Missions with underwater detonations using timed delay devices will only be conducted during daylight hours. The time of underwater detonations shall be limited to an hour after sunrise and an hour before sunset.
- (h) Time delays longer than 10 minutes will not be used. Initiation of the timer device will not start until the mitigation-monitoring zone is clear of marine mammals for 30 minutes.
- (i) A mitigation-monitoring zone will be established around each underwater detonation location as indicated in Table 4 (see below) based on charge weight and length of time-delay used. When conducting surveys within the mitigation-monitoring zone radius (but always outside the detonation plume radius/human safety zone), travel in a circular pattern around the detonation point, surveying the inner (toward the detonation site) and outer (away from the detonation site) areas. For a survey radius of 1,000 yard (yd) (914.4 m or 3,000 ft), the boat will be positioned at 500 yd (457.2 m or 1,500 ft) from the detonation point. Similarly, for a survey radius of 1,400 yd (1,280.2 m or 4,200 ft), boats will be positioned at 700 yd (640.1 m 2,100 ft) distance.
- (j) For a survey radius of 1,000 yd, two boats are required. For a radius of 1,400 yd, either three boats or two boats/one helicopter are required.
- (k) When using two boats, each boat will be positioned on opposite sides of the detonation location, separated by 180 degrees. When using three boats, each boat will be separated by 120 degrees (equidistant from each other).
- (l) Two observers in each boat will conduct continuous visual surveys of the mitigation-monitoring zone for the entire duration of the training event, including at least 30 minutes prior to detonation. Observers will search the mitigation-monitoring zone for the presence of marine mammals, and other marine species such as sea turtles, diving birds, large concentrations of fish or jellyfish, and large *Sargassum* mats. The presence of diving birds, fish, jellyfish, and *Sargassum* may indicate an increased likelihood of dolphin presence.
- (m) The mission would be postponed if large concentrations of fish, jellyfish, and/or large *Sargassum* rafts are observed within the mitigation-monitoring zone. The delay would continue until the fish, jellyfish, and/or large *Sargassum* rafts that caused the postponement are confirmed to be outside the mitigation-monitoring zone.
- (n) To the extent practicable, boats will maintain an 18.5 kilometer (km) per hour (10 knot or 11.5 miles per hour) search speed. This search speed is expected to ensure adequate coverage of the buffer zone. While weather conditions and Beaufort sea state may require slower speeds in some instances, 18.5 km per hour (10 knots) is considered a prudent, safe, and executable speed that will allow adequate surveillance. For a 1,000 yd survey zone, a boat travelling at 18.5 km and 500 yd from the detonation point would circle the point approximately 3.2 times during a 30 minute survey period. By using two

boats, approximately 6.4 circles would be completed in total. Similarly, for a 1,400 yd radius, each boat would circle the detonation point approximately 2.3 times within 30 minutes, and use of three boats would result in 6.9 total circles.

(o) If available, a U.S. Navy helicopter can be used in lieu of one of the survey boats, so long as safety of flight is not jeopardized. U.S. Navy helicopter pilots are trained to conduct searches for relatively small objects in the water, such as a missing person. A helicopter search pattern is dictated by standard U.S. Navy protocols and accounts for multiple variables, such as size and shape of the search area, size of the object, and environmental conditions, among others.

(p) The mitigation-monitoring zone will be surveyed for 30 minutes prior to detonation and continue for 30 minutes after detonation (concentrated on the area down current of the test site), in order to monitor for marine mammals and other protected species. It is the U.S. Air Force's (on behalf of the U.S. Navy) intent to conduct five successive detonations with a maximum time of 20 minutes between detonations, although a variety of factors can cause a delay of longer than 20 minutes, including a delay until the following day. Monitoring would continue during the 20 minutes time between detonations, and would serve as both post-detonation monitoring as well as pre-mission monitoring for the next detonation. If the time between detonations is delayed beyond 20 min, post-mission monitoring will be conducted for 30 minutes. At the conclusion of the final detonation, post-monitoring will be conducted for 30 minutes.

(q) Other personnel besides designated observers shall also maintain situational awareness of the presence of marine mammals within the mitigation-monitoring zone to the extent practicable given dive safety considerations.

(r) Divers placing the charges on mines will observe the immediate underwater area around the detonation site for marine mammals and other marine species such as diving birds, sea turtles, and Gulf sturgeon (*Acipenser oxyrinchus desotoi*), and report sightings to surface observers.

(s) If a marine mammal is sighted within an established mitigation-monitoring zone or moving towards it, underwater detonation events will be postponed or suspended until the marine mammal that caused the postponement/suspension of training operations has voluntarily left the area and the area is clear of marine mammals for at least 30 minutes.

(t) If a marine mammal is detected within or about to enter an established mitigation-monitoring zone and subsequently cannot be reacquired, the mission will be postponed or suspended until the last verified location is outside the mitigation-monitoring zone, the animal is moving away from the area, and the area is clear of marine mammals for at least 30 minutes.

(u) Any marine mammal observed after an underwater detonation either injured or exhibiting signs of distress will be reported to the Eglin AFB. Eglin AFB will coordinate

with other members of marine mammal stranding networks, as appropriate, and report these events to NMFS or USFWS. The report will contain date and time of sighting, location, species, description, and indications of the animal's status.

(v) Monitoring shall be conducted before NEODS missions to clear marine mammals within the mitigation-monitoring zone. If protected animals are inside the mitigation-monitoring zone, firing shall be postponed until they left the area. The following monitoring procedures will be conducting during the NEODS missions:

(i) Conduct survey clearance procedures using best operational methods possible;

(ii) Clear mitigation-monitoring zone and avoid all dolphins and protected species indicators (e.g., *Sargassum* rafts) to the maximum extent possible;

(iii) Clearance procedures shall be re-conducted if dolphins or protected species indicators (e.g., *Sargassum* rafts) are encountered;

(iv) All observers must complete the Marine Observer Certification course annually; and

(v) Conduct post-mission observation and report observation data as required by Eglin AFB's Natural Resources Section, 96 CEG/CEVSN.

7. Reporting Requirements

The Holder of this Authorization is required to:

(a) Submit an annual summary (coordinated through 96 CEG/CEVSN) of mission observations to:

NMFS Southeast Regional Office
Protected Resources Division
9721 Executive Center Drive North
St. Petersburg, Florida 33702

NMFS Office of Protected Resources
1315 East West Highway
Silver Spring, Maryland 20910

(b) Submit an annual report and a final report summarizing all mission activities as well as monitoring and mitigation results to the Director of the Office of Protected Resources, NMFS, and the Southeast Regional Administrator, Southeast Regional Office, NMFS, within 90 days after the conclusion of NEODS training operations. This report must contain and summarize the following information:

- (i) Date(s), time(s), and location(s) of explosive activities, weather during (including Beaufort Sea State) all detonations; and design of the monitoring program;
- (ii) Results of the monitoring program including, but not necessarily limited to: species counts; numbers of observed disturbances; descriptions of the disturbance behaviors before, during, and after explosive activities; and bearing and distances;
- (iii) Observations of unusual behaviors, numbers, or distributions of marine mammals in the activity area shall be reported to NMFS and the U.S. Fish and Wildlife Service (USFWS) so that any potential follow-up observations can be conducted by the appropriate personnel. In addition, observations of tag-bearing marine mammals, sea turtles, and fish carcasses as well as any rare or unusual species of marine mammals and fish shall be reported to NMFS and USFWS.

(c) Submit a draft comprehensive final report at least 180 days prior to the expiration of these regulations. This comprehensive technical report shall provide full documentation of methods, results, and interpretation of all monitoring during the first four and a half years of the Authorization. A revised final comprehensive technical report, including all monitoring results during the entire period of the Authorization. A revised final comprehensive technical report, including all monitoring results during the entire period of the Authorizations, must be submitted 90 days after the end of the period of effectiveness of the regulations. This report shall summarize the activities undertaken and the results reported in all previous reports.

(d) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this rule, such as injury, serious injury or mortality, Eglin AFB shall immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Southeast Region Marine Mammal Stranding Network at 877-433-8299 (Blair.Mase@noaa.gov and Erin.Fougeres@noaa.gov) (Florida Marine Mammal Stranding Hotline at 888-404-3922). The report must include the following information:

- (i) Time, date, and location (latitude/longitude) of the incident; description of the incident; status of all noise-generating source use in the 24 hours preceding the incident; water depth; environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility); description of all marine mammal observations in the 24 hours preceding the incident; species identification or description of the animal(s) involved; fate of the animal(s); and photographs or video footage of the animal(s) (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with Eglin AFB to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Eglin AFB may not resume their activities until notified by NMFS via letter or email, or telephone.


In the event that Eglin AFB discovers an injured or dead marine mammal, and the lead observer determines that the cause of injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Eglin AFB will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Southeast Region Marine Mammal Stranding Network (877-433-8299) and/or by email to the Southeast Regional Stranding Coordinator (Blair.Mase@noaa.gov) and Southeast Regional Stranding Program Administrator (Erin.Fougeres@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Eglin AFB to determine whether modifications in the activities are appropriate.

In the event that Eglin AFB discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the activities authorized in the final rule (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Eglin AFB will report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Southeast Regional Marine Mammal Stranding Network (877-433-8299), and/or by email to the Southeast Regional Stranding Coordinator (Blair.Mase@noaa.gov) and Southeast Regional Stranding program Administrator (Erin.Fougeres@noaa.gov), within 24 hours of discovery. Eglin AFB will provide photographs or video footage (if available) or other documentation of the stranded animals sighting to NMFS and the Marine Mammal Stranding Network.

8. **Withdrawal, Suspension, or Modification:** This Letter of Authorization will be withdrawn or suspended if, after notice and opportunity for public comment, the Assistant Administrator determines that: (i) the regulations published at 50 CFR §§217.80-217.89 are not being substantially complied with, or (ii) the taking allowed is having, or may have, more than a negligible impact on the species or stock affected. This Letter of Authorization may also be modified substantively only after notice and opportunity for public comment except in the following circumstances. Public notice and opportunity for comment shall not be required prior to suspension, withdrawal or substantive modification if the Assistant Administrator determines that an emergency exists that poses a significant risk to the wellbeing of the species or stock of marine mammals concerned. Notification will be published in the *Federal Register* within 30 days following the action.

9. A copy of this Authorization must be in the possession of all contractors, clients, observers, and persons conducting NEODS training operations under the authority of this Letter of Authorization.

10. A violation of any of the terms or conditions of this Letter of Authorization will be subject the Holder and/or any individual who is operating under authority of the Holder of this Letter of Authorization to the penalties provided under the MMPA.



Helen M. Golde
Acting Director
Office of Protected Resources
National Marine Fisheries Service

April 24, 2012
Date

Attachment

Attachment

Table 1. Authorized take numbers for each species of marine mammal in the Gulf of Mexico over the five year rule for the U.S. Air Force's NEODS training operations.

Species	Authorized Take in the Gulf of Mexico
Atlantic bottlenose dolphin (<i>Tursiops truncatus</i>)	50 (average of 10 annually)

Table 2. Current NMFS threshold criteria and metrics utilized for impact analyses from the use of explosives.

Criterion	Criterion Definition	Threshold
Mortality	Onset of severe lung injury (mass of dolphin calf)	31 psi-msec
Level A harassment (non-lethal injury)	50% animals would experience ear drum (TM) rupture	205 dB re 1 μ Pa ² -s EFD
Level A harassment (non-lethal injury)	Onset of slight lung injury	13 psi-msec positive pressure
Level B harassment	Non-injurious, TTS and associated behavioral disruption (dual criteria)	12 psi peak pressure (>2,000 lb) 23 psi peak pressure (<2,000 lb)
Level B harassment	Non-injurious, TTS and associated behavioral disruption (dual criteria)	182 dB re 1 μ Pa ² -s EFD, 1/3 octave band
Level B harassment	Non-injurious, Sub-TTS behavioral disruption (for multiple detonations only)	177 dB re 1 μ Pa ² -s EFD, 1/3 octave band (for multiple detonations only)

Table 3. Rounded Survey Radius by Time Delay

Charge Weight (NEW)	Rounded Survey Radius by Time Delay					
	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes	10 minutes
5 lb	1,000 yd	1,000 yd	1,000 yd	1,000 yd	1,400 yd	1,400 yd
10 lb	1,000 yd	1,000 yd	1,000 yd	1,400 yd	1,400 yd	1,400 yd

Table 4. Mitigation-monitoring zone radii for underwater explosions for triggering mitigation.

Ordnance	NEW (lbs)	Depth of Explosion (m)	Ranges for 205 dB re 1 $\mu\text{Pa}^2\text{-s}$ EFDL (m)	Ranges for 13 psi-msec (m)	Ranges for 182 dB re 1 $\mu\text{Pa}^2\text{-s}$ EFDL (m)	Ranges for 23 psi (m)	Ranges for 177 dB re 1 $\mu\text{Pa}^2\text{-s}$ EFDL (m)
Summer							
NEODS MCM 5 lb charge	5	18	52.1	156	227.5	222	520
NEODS MCM 10 lb charge	10	18	77	225	385	280	845
Winter							
NEODS MCM 5 lb charge	5	18	52.2	156	229.8	222	529
NEODS MCM 10 lb charge	10	18	77	226	389	280	880

EFDL = Energy Flux Density Level

Table 5. Beaufort sea state scale for marine mammal observation.

Scale Number	Sea Conditions
0	Flat calm, no waves or ripples.
1	Small wavelets, few if any whitecaps.
2	Whitecaps on 0 to 33% of surface; 0.3 to 0.6 m (1 to 2 ft) waves.
3	Whitecaps on 33 to 50% of surface; 0.6 to 9 m (2 to 3 ft) waves.
4	Whitecaps on greater than 50% of surface; greater than 0.9 m (3 ft) waves.