

**DEPARTMENT OF THE ARMY**  
**UNITED STATES ARMY ELEMENT NAVY ACTIVITIES**

(b)(7)(F)

WASHINGTON, DC 20311-0300

DAPE-ZZA-P-SD

22 November 2011

MEMORANDUM FOR RECORD

SUBJECT: Column E Explanation for 93-F-0005 involving three bottlenose dolphins FY10

1. Procedure:

All dolphins will be required to beach into a padded beaching tray for the duration of the test and will be transported to the veterinary clinic for placement of a transhepatic catheter (required for administration of the radiolabel) prior to being transported to the scan facility. Beaching is a common behavior for all Navy Marine Mammal Program (MMP) dolphins. Placement of the catheter will be performed by MMP veterinarians. Catheter placement will be performed under ultrasound guidance and the dolphin will be given a local anesthetic at the site of insertion. The apical end of the catheter will be placed in the vena cava to permit rapid distribution of the radiolabel once administered. Upon placement of the catheter, the dolphin will be transported to the scan facility in a flatbed truck. The catheter is heparinized prior to placement and patency is maintained during transport by administration of a saline drip.

The dolphin will rest quietly in the scanner for baseline scans. For test sessions, the dolphin will be trained to produce echolocation clicks while in the biomedical scanner and echoes will be returned to the dolphin through the lower jaw via a jawphone. During playback to the dolphin, the timing of echo presentation will be delayed from the production of a preceding click according to the distance that the target is to be simulated from the dolphin. The dolphin will be trained to report changes in the target echo corresponding to a change in target type. Trials occurring in the beaching tray will last less than 30 minutes.

2. Scientific justification:

Sedatives have the potential to interfere with cortical function and the impacts of their utilization are largely unknown in bottlenose dolphins. However, diazepam has been shown to affect metabolic processes in bottlenose dolphins (Ridgway et al., 2006) and it is likely that other sedatives may also impact metabolic processes or impair cognitive processes. An objective of the study is to determine regions of the brain that are active during echo-processing and target discrimination in an echolocation task. The addition of sedatives may compromise the study results either through direct effects on metabolic activity within the brain or the impairment of cognitive processes during the target discrimination. Sedatives will only be used during functional scans when induced sleep is required as an experimental condition.

The subjects will be conditioned to the scanning procedure in an effort to reduce animal anxiety. The conditioning process will include extensive training sessions involving beaching,

Obtained by Rise for Animals.

FY 2016

lying in a lateral position for several minutes, performing the echolocation task while lying laterally, movement on a mobile table or cart (for transportation into the scan facility and table movement during the scan), approximations to catheter placement (achieved by the use of fingernail presses or needle pricks at the site of catheter insertion), and performance of the echolocation task.

If, during a scan, the dolphin demonstrates anxiety sufficient to warrant sedation, an IM/IV injection of midazolam will be given. The determination of whether anxiety is sufficient to warrant sedation will be at the discretion of the on-location staff veterinarian.

3. No federal regulations require this procedure.

4. The point of contact is the undersigned at (b)(6),(b)(7)(C)

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