

Protective Measures Assessment Protocol (PMAP)

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Abstract

Conducting safe, effective training at sea is one of the most important events the U.S. Navy does in peacetime. However, as stewards of the environment, the Navy also takes prudent steps to minimize the effect of that training on the marine environment. A significant milestone supporting the U.S. Navy's marine stewardship efforts was reached in 2004 with the implementation of the Protective Measures Assessment Protocol (PMAP) software tool. The Navy worked cooperatively and synergistically with industry to develop and implement a computer-based decision support tool that provides commanders with situational awareness and appropriate mitigation measures during training and testing events. The mitigation measures contained in PMAP include many actions that were already common practice, such as posting trained lookouts and avoiding critical areas. The user enters data on the location, time and type of event, and PMAP provides environmental awareness information (e.g. habitat features), and a report of required mitigation measures to manage potential environmental risks. The mitigation measures of PMAP aid in designing training and testing events that comply with environmental regulations and Navy doctrine. To meet the challenges of complying with applicable laws and regulations [i.e., Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA)], Navy continually enhances the utility of PMAP, such as incorporating changes based on science or new regulations that users can then update PMAP data via the internet. This capability ensures the most current and scientifically relevant information is available to support exercise planning. Additionally, this supports the ability of Navy to update the mitigation measures currently in place in order to support newly completed or updated environmental analyses associated with MMPA and ESA compliance. PMAP is a valuable resource to support conducting safe, effective at sea training and testing required by U.S. Law.

What is PMAP?

Conducting safe, effective training at sea is one of the most important things the U.S. Navy does to maintain readiness, but we must also take prudent steps to minimize the impact of that training on the marine environment. The Protective Measures Assessment Protocol (PMAP) program is designed to help minimize potential impacts to marine species and the ocean environment during routine training, testing and maintenance activities involving the use of active sonar and ordnance. Protective measures contained in PMAP include many actions that are already common practice, such as posting trained lookouts and avoiding certain critical areas as well as other event-specific actions.

PMAP is a valuable resource to help Navy units conduct safe, effective training at sea. PMAP is an interactive software tool that was developed and implemented in 2004. The program was originally designed to support events such as:

- > Gunnery exercises (live & inert)
- > Missile exercises (live & inert)
- > Bombing exercises (live & inert)
- > Active sonar exercises & maintenance
- > Mine warfare exercises
- > Underwater detonations
- > Torpedo exercises

PMAP INPUT: unit's location in latitude and longitude, NIMA chart number used in exercise location, date, type of exercise, type of weapon/sonar system, Type of target (if applicable, fixed or moving), position of target during exercise

PMAP OUTPUT: large scale map provides the geographic perspective, small scale map to show proximity to identified sensitive environmental areas, general mitigation measures for the event, specific mitigation applicable to the identified geographic area. The final report is signed by the units Commanding Officer and filed.

The image shows a collage of PMAP software screenshots with callout boxes explaining various steps and features:

- Introduction Screen:** A callout box points to the "Run PMAP" button, stating "Select the 'Run PMAP' button".
- STEP 2 of 7:** A callout box points to the "Exercise" dropdown menu, stating "Select an exercise, paying attention to the regime and explosive/Non-explosive options".
- STEP 2 of 7:** A callout box points to the "Weapon System" dropdown menu, stating "Select the weapon system from the list that you will be using".
- STEP 2 of 7:** A callout box points to the "Target Type" dropdown menu, stating "Select the type of target such as Fixed, Moving, or No-Target".
- STEP 2 of 7:** A callout box points to the "Add" button in the "List of Selected Exercises" table, stating "Select 'Add' to build your list of exercises for the location".
- STEP 2 of 7:** A callout box points to the "Target Latitude" and "Target Longitude" input fields, stating "Enter the Targets coordinates. Certain exercises will pre-fill these boxes".
- STEP 3 of 7:** A callout box points to the "Confirm" button, stating "If you need help, this button will take you to the appropriate section of the tutorial".
- STEP 3 of 7:** A callout box points to the "Confirm" button, stating "This screen is to confirm that you have correctly entered the Unit's coordinates and the correct NIMA chart #. If correct, select 'Confirm'".
- STEP 7 of 7:** A callout box points to the "Training Areas Controls" and "Habitat Controls" sections, stating "This screen displays the different measures based upon the exercise, the selected target area and the dates of the exercise".

PMAP has been updated several times from 2006 to 2011, these updates focused on:

- > Enhancement to user interface capabilities
- > Incorporating active sonar maintenance mitigation
- > Available via web download vice CD-ROM, reducing costs for manpower and materials.
- > The ability to download PMAP updates via the web, allowing for inclusion of rapid changes ensuring PMAP incorporates the latest mitigation
- > The ability for authorized users to run PMAP directly from a web site, precluding the need to install the program, as well as ensuring the latest information is utilized
- > Applicability to all training activities, world wide
- > Incorporated all mitigation measures from completed environmental analyses in the U.S. Navy's major training areas along the East Coast, Gulf of Mexico, Southern California, Hawaiian Islands, Pacific Northwest and Marianas Islands

Examples of PMAP mitigation/protective measures:

- > Employment of qualified watchstanders and lookouts
- > Navy personnel received NMFS approved training to aid in spotting marine mammals
- > Survey the area prior to conducting the event
- > Establish safety or exclusion zones where the event will **NOT** occur if a marine mammal is sighted
- > Avoidance of features that may attract protected species, such as algal mats, Sargassum rafts and/or coral reefs
- > Use of passive listening devices
- > Sonar power down or shut down zones
- > Special instructions for designated critical habitats and/or sanctuaries as required

Future of PMAP

- > PMAP will be updated whenever mitigation measures change
- > PMAP has become, and will continue to be, the primary resource for mitigation/protective measures for all U.S. Navy training activities world wide