# STURGIS

U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

## BACKGROUND

Following a thorough environmental assessment with a 30-day public comment period, the U.S. Army Corps of Engineers awarded a $34.66 million contract to CB&I Federal Services for the decommissioning, dismantling and disposal of the STURGIS barge in March 2014.

On April 16, 2015 the STURGIS was relocated from Joint Base Langley-Eustis, Virginia to Galveston, Texas for decommissioning and dismantling. After a 1,750-mile journey, the STURGIS arrived in Galveston on April 30, 2015.

Safety is the number one priority, and the Corps of Engineers will use proven controls and precautions to address safety and other engineering details throughout the project.

## IMPORTANT POINTS

- All of the decomissioning work will take place in the Malin International Shipyard , at Pier 41, which is located in an industrial area of Galveston Island. A map of the location is on page four.
- The STURGIS will be situated in a slip that is behind multiple fences and controlled by security. There will be no public access to the area.
- This process will be conducted in a contained area of the barge using proven industry standards.
- The MH-1A nuclear reactor, which is installed on the STURGIS barge, has no nuclear fuel.
- The residual radioactive materials are in the form of activated materials and contamination, and are located within the remaining primary reactor systems that pose no radiation dose risk to the public. The residual radioactive material will be taken to a licensed disposal facility.
- There are normal project risks associated with this project that the Corps of Engineers will mitigate throughout the project (i.e. weather, transportation risks, etc).
- It is anticipated that the STURGIS will be in Galveston for 14-18 months.

## HISTORY

In March 1963, the World War II Liberty Ship *Charles H. Cugle* was selected from the Mobil Reserve Fleet for conversion to a mobile power source containing a high power pressurized water nuclear reactor designated the MH-1A. The propulsion plant was removed from the vessel, and the midsection was replaced with a new midsection containing the power plant, a 350-ton steel containment “spheroid,” and a concrete collision barrier. The vessel, which essentially became a barge, was renamed STURGIS.

The STURGIS operated at Fort Belvoir, Virginia for about one year and was then transferred to Gatun Lake in the Panama Canal Zone where it was used to generate electricity for military and civilian use.

In the 1970s, the Department of Army recommended that the deactivated reactors be placed into a safe storage mode that would allow the shorter-lived radionuclides to decay. It was expected that delaying decommissioning would reduce radioactive waste volumes and worker exposures. After final shutdown in 1976, the STURGIS was towed to Fort Belvoir to deactivate the reactor for safe storage. At that time, the Department of Army prepared an Environmental Assessment that indicated that deactivation would not create significant adverse local, regional, or national impacts on the environment. The principal activities involved in deactivating the reactor of the STURGIS were: 1) removal of the nuclear fuel which was returned to the Department of Energy; 2) disposal of radioactive wastes/components; and 3) isolation of the remaining radioactive materials from the public by appropriate physical barriers.

The reactor was de-fueled, decontaminated, and sealed before being towed to the James River Reserve Fleet at Joint Base Langley-Eustis, Virginia, where it was for more than 35 years. During this time the STURGIS has been monitored and received periodic dry dock maintenance. The MH1-A nuclear reactor has been in long-term safe storage.

## HISTORIC PRESERVATION

The STURGIS is considered an historic property and eligible for listing in the National Register of Historic Places. Through consultation with the Virginia Department of Historic Resources, the Corps has prepared a Memorandum of Agreement that addresses the required mitigation efforts for vessel disposal. These efforts will include preserving any historic items on the STURGIS, where applicable. Additionally, the Corps has made historic videos of the construction and testing of the STURGIS available in the History section of the project website.

## WASTE SEGREGATION PROCESS

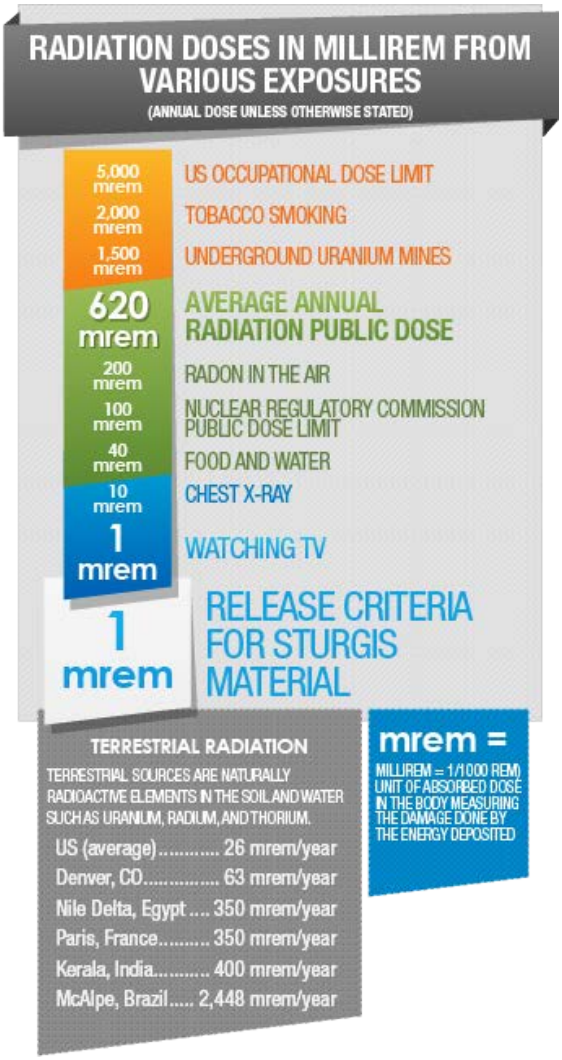
The Corps of Engineers and its contractors consider green and sustainable remediation practices in all aspects of our technical approach and project execution. Keeping that in mind, the project team will analyze each specific waste streams to determine if they are appropriate for decontamination and recycling. If decontamination and recycling are not an option, the items will be disposed of as a radioactive/hazardous waste.

There will be a vast array of waste streams generated during the decommissioning process. These wastes will be assessed, transported and disposed of in accordance with local, state and federal regulations. Some specific wastes streams may include asbestos, lead based paints, PCBs, elemental lead used for shielding, and radioactive materials. Each of the consolidated waste streams must comply with the selected disposal facilities waste acceptance criteria and permits/licenses issued to that facility.

The Corps of Engineers is still looking at options on the final disposal of the STURGIS after all of the hazardous waste and residual radioactive waste have been removed. For the low level radioactive waste the two potential facilities are 1) The Waste Control Specialists - Federal Waste Facility, Andrews County, Texas and 2)

Energy Solutions Facility, Clive, Utah. The non-radiologically contaminated hazardous waste (i.e. asbestos, lubrication oils, diesel residue, cleaning materials, etc.) will go to a licensed disposal facility in Texas.

The project team is currently reviewing each facility's waste acceptance criteria to determine which facility each waste stream will be transported for disposal.




## RADIATION

The chart to the right provides some annual dose limits and/or exposure averages for specific events in units of mrem. There are naturally occurring levels of radiation that people are exposed to everyday, such as the sun, televisions, microwaves, etc. Standing next to the STURGIS the radiation dose is the same as being in the sun for an hour. Standing inside the STURGIS the radiation dose is actually less than naturally occurring background levels on land due to shielding provided by the STURGIS.

The materials that will be removed from the STURGIS will meet the 1 mrem criteria, which is equivalent to watching TV. These materials will be placed in industry standard containers, preventing any exposure to the public.

## MONITORING

The Corps of Engineers will conduct environmental monitoring of the air, water, sediment and external exposure prior to, during, and after the STURGIS Project. The monitoring activities conducted during the project will be reviewed and compared to established regulatory limits. Results of monitoring will be made available on the project website and emailed to the project's stakeholder list. This list includes officials from the Port of Galveston, Galveston City Council, Texas A&M, Galveston Chamber of Commerce, Galveston Bay Foundation, members of the public and more. Monitoring after the completion of the STURGIS Project will be compared to the baseline surveys completed prior to project initiation.

We will continue to work closely with the Texas Department of State Health Services throughout the project.

## HURRICANE PLAN

It is anticipated that the STURGIS will only be in Galveston for two hurricane seasons. In the event of severe weather, including a hurricane, the Corps of Engineers will implement detailed plans. This includes double tying the STURGIS in place and making sure it is water tight. The STURGIS will be left in the shipyard to ride out the storm. This plan is consistent with what Malin Shipyard has done before during previous hurricanes.


## EXPERIENCED TEAM

The Corps of Engineers has a highly skilled team of engineers, scientists, radiation safety specialists (health physicists), industrial hygienists, and contractors dedicated to the project. The contract employees, who will direclty dismantle the STURGIS, are all trained in safely handling radioactive and hazordous waste.

Additionally, the Radiological Health Physics Regional Center of Expertise, based out of the Corps of Engineers, Baltimore District, is overseeing this project. This highly trained and experienced team of health physicists provides radiation safety and technical support to the Corps of Engineers and other federal agencies across the United States and overseas for projects involving all aspects of radiological work. A member from the Center of Expertise will be in Galveston throughout the duration of the decommissioning project.

For more information on the Center of Expertise please visit the website:
http://www.nad.usace.army.mil/About/RegionalCentersofExpertise/RadiologicalHealthPhysics.aspx

## CONTACT

If you have questions or would like to be added to the email list for project updates, please contact the Baltimore District Corporate Communication Office at cenab-cc@usace.army.mil or 410-962-2809.

For more project details and to view the videos please visit the website at:
http://www.nab.usace.army.mil/Missions/Environmental/Sturgis.aspx.