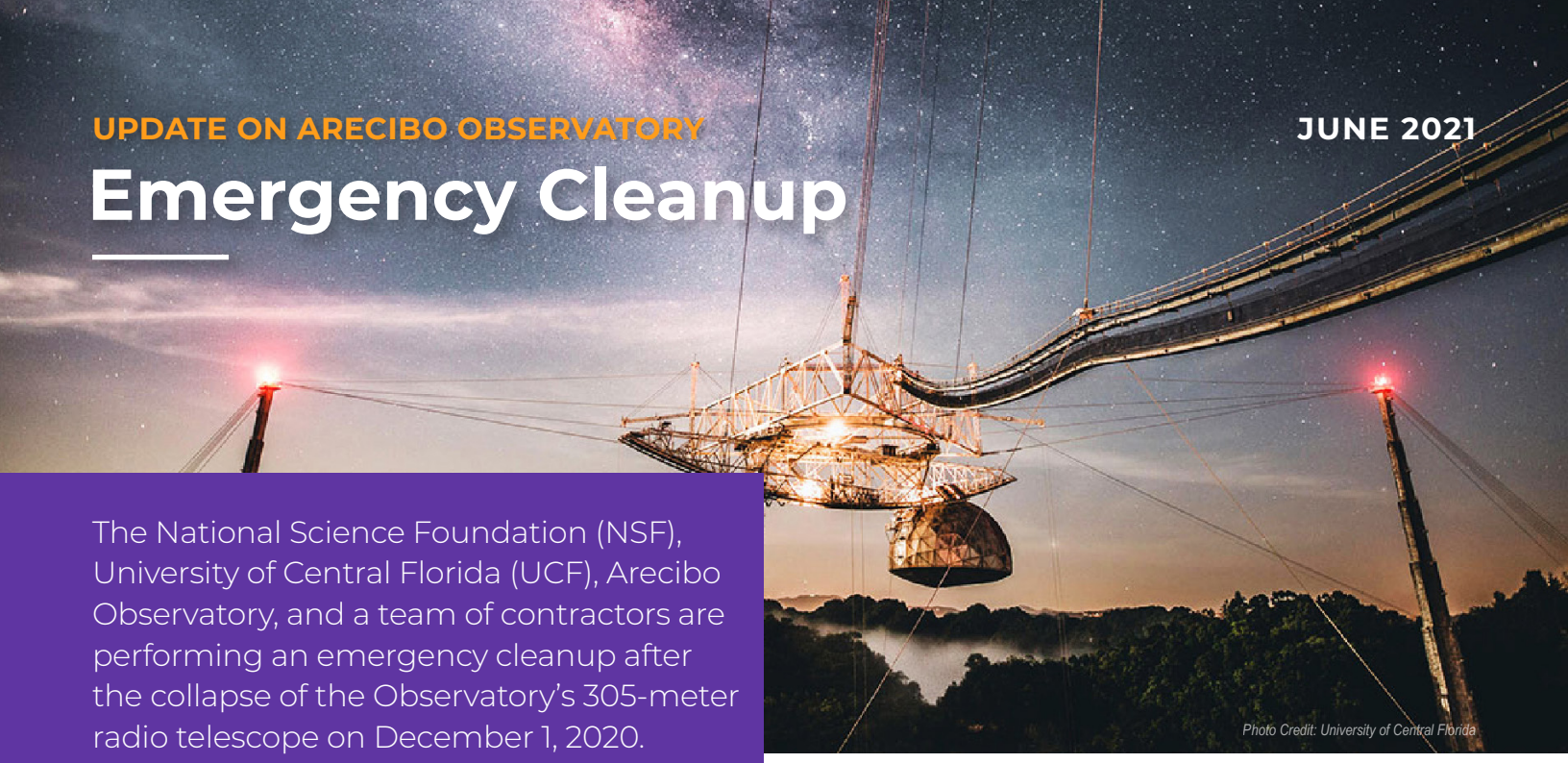
UPDATE ON ARECIBO OBSERVATORY

JUNE 2021

Emergency Cleanup



The National Science Foundation (NSF), University of Central Florida (UCF), Arecibo Observatory, and a team of contractors are performing an emergency cleanup after the collapse of the Observatory's 305-meter radio telescope on December 1, 2020.

National Science Foundation

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The emergency cleanup aims to protect life and property and to enable safe operations at the facility. Information provided is meant to keep the community updated regarding the protection of environmental and historic resources as removal of the collapsed structural elements continues. To view the news release of the Observatory's 305-meter telescope collapse on December 1, 2020, go to: https://go.usa.gov/xsmdV. For additional updates on NSF's response to the Arecibo Observatory's 305-meter telescope collapse, please view the media page https://www.nsf.gov/news/special_reports/arecibo.

Environmental Status

ENSURING SAFETY IS NSF's TOP PRIORITY

This includes not only the safety of personnel on the site, but also the protection of the environment. NSF, UCF, Arecibo Observatory, and the team of contractors that includes environmental specialists have been working since the December 1 collapse to communicate with regulatory agencies and to identify environmental compliance requirements, including those related to pollution prevention, biological resources, and historic sites.

The team, including field specialists and subject matter experts, has taken the following actions to address environmental and natural resources:

- Submitted a Notice of Intent under the National Pollutant Discharge Elimination System Construction General Permit, which includes a Stormwater Pollution Prevention Plan.
- Installed stormwater pollution prevention measures throughout the work area to prevent erosion.
- Developed and implemented plans for the sampling and analysis of groundwater and surface water to monitor water quality.
- Performed soil sampling and soil removal where hydraulic oil was released during the collapse. No hazardous materials were released as a result of the collapse.

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- Conducted sensitive species surveys, including for the Puerto Rican broad-winged hawk, and consulted with the U.S. Fish and Wildlife Service (USFWS) to avoid adverse effects to listed species.
- Continued implementing the Puerto Rican boa protection protocols during cleanup operations.
- Safely collected and disposed of solid lead counterweights that were part of the fallen structure.

The team met virtually with the U.S. Environmental Protection Agency on January 14, 2021, the Puerto Rico Department of Natural and Environmental Resources on March 1, 2021, and the USFWS on February 22, 2021 to update them on the ongoing cleanup operations and results, and to discuss any feedback regarding the cleanup. The team communicates regularly with these agencies.

Immature Puerto Rican broad-winged hawk (dorsal and ventral views)

Puerto Rican Boa

Historic Preservation Overview

NSF and UCF also recognize the need to address concerns about historic preservation and cultural resources. NSF prepared a Preservation and Management Plan for the Arecibo Observatory Historic District in 2020 to guide management of the Observatory in balancing historic preservation principles in its operation and mission. NSF has been in contact with the Puerto Rico State Historic Preservation Office (PR SHPO) and the Advisory Council on Historic Preservation (ACHP) since November 2020 (when decommissioning was being planned before the collapse on December 1st, 2020) to consult on the protection and preservation of historically important elements of the structures and site, and continues to provide updates. NSF met virtually with the PR SHPO on December 1, 2020 shortly after the collapse and met in person with the PR SHPO at the Observatory on December 7, 2020. Since then, repairs to protect the damaged resources have been completed in a manner consistent with the Programmatic Agreement and Preservation Plan. NSF maintains regular communication with both agencies to provide updates.

For information about the historic significance of the Arecibo Observatory, refer to the *National Register of Historic Places Nomination* (https://www.nsf.gov/mps/ast/env_impact_reviews/arecibo/section106/PR_Arecibo_County_NAIC_Historic_District_form.pdf) for the historic district, which was updated by NSF in 2020.

The Salvage Survey Committee

Recognizing that there is interest in preserving identifiable remains of the contributing resources of the historic district as well as scientific equipment that could be reused, at NSF's direction, UCF established the Salvage Survey Committee in early 2021. The Salvage Survey Committee is tasked with screening debris to identify objects of potential scientific, cultural, or historic value to be preserved for potential display at the site or other museums. NSF and UCF plan to retain instrumentation, hardware, and reflector panels for potential reuse and/or public display where possible, and to recycle all other materials, with the proceeds from recycling being put toward costs related to the cleanup and continued operation of the Arecibo Observatory.

The group is composed of various professionals and community members knowledgeable about the Observatory, including:

- Arecibo Observatory scientists
- NSF Historian
- Smithsonian Institute personnel, and
- Arecibo Observatory long-time users.

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The Salvage Committee is also tasked with helping to determine which objects could be curated or used in future exhibits. The Committee reports its recommendations to the Observatory Director and NSF, who will ultimately determine the final destination of the objects. Some of the work by the Salvage Survey Committee is presented below.

THE GREGORIAN DOME:

Installed in 1996, held two large reflectors that helped focus radiation. This type of telescope was named after James Gregory, one of the foremost mathematicians of the seventeenth century.


Before the Collapse


After the Collapse

THE L-BAND FEED ARRAY (ALFA):

Allowed for large-scale surveys of the sky at a high sensitivity, including star formation and evolution.


Before the Collapse


After the Collapse

ACCESS TO THE PLATFORM:

A cable car provided access to the Arecibo Telescope platform. The following picture shows the steps that provided access from the cable car to the platform.


After the Collapse

Public Outreach

NSF is committed to involving the multiple stakeholders and providing information to the interested communities, locally as well as the scientific community, regarding the cleanup and next steps at the Arecibo Observatory.

Contact information:

Arecibo-feedback@nsf.gov

Below are the main activities conducted so far involving public outreach and information on upcoming events:

- NSF conducted a webinar on April 2 to update the scientific community and other interested parties as to the progress completed on site to date. The webinar included a presentation and a question and answer session. A follow-on workshop is taking place in June.
- NSF conducted a Public Meeting to discuss the Transportation Plan on April 5 in person in Arecibo, Puerto Rico and virtually via Zoom/YouTube. Members of the public were invited to participate, and questions were answered during the session.

Source: https://www.nsf.gov/mps/ast/env_impact_reviews/arecibo/eis/305-meter_collapse.jsp.