

# Tethered Aerostat Radar System (TARS)



## Tags

Tethered Aerostat Radar System, TARS, Surveillance, Radar, Visual, United States of America, USA, Bahamas, Puerto Rico

## Summary

This data displays the location of the Tethered Aerostat Radar System (TARS) throughout the United States and overseas. The TARS locations were compiled from the Natural Resources Defense Council (NRDC) - Renewable Energy and Defense Geospatial Database (READ-Database), the Department of Defense (DoD), and the United States Air Force (USAF) Tethered Aerostat Radar System factsheet.

## Description

This data displays the location of the Tethered Aerostat Radar System (TARS) throughout the United States and overseas.

## Credits

There are no credits for this item.

## Use limitations

Acknowledgment of the Natural Resources Defense Council (NRDC) - Renewable Energy and Defense Geospatial Database (READ-Database), the Department of Defense (DoD), the United States Air Force (USAF) and Argonne National Laboratory (ANL) would be appreciated in products derived from this data.

## ArcGIS Metadata

### Topics and Keywords

* CONTENT TYPE	Downloadable Data
PLACE KEYWORDS	United States of America, USA, Bahamas, Puerto Rico
THEME KEYWORDS	Tethered Aerostat Radar System, TARS, Surveillance, Radar, Visual

### Citation

* TITLE	radar_site_tars
PRESENTATION FORMATS	* digital map

### Citation Contacts

#### RESPONSIBLE PARTY

ORGANIZATION'S NAME Natural Resources Defense Council (NRDC) - Renewable Energy and Defense Geospatial Database (READ-Database), the Department of Defense (DoD), the United States Air Force (USAF). and Argonne National Laboratory (ANL).

CONTACT'S ROLE originator

## Resource Details

DATASET LANGUAGES English (UNITED STATES)

STATUS completed

SPATIAL REPRESENTATION TYPE\* vector

### SUPPLEMENTAL INFORMATION

The Tethered Aerostat Radar System, or TARS, is an aerostat-borne, surveillance program. Using the aerostat as a stationary airborne platform for a surveillance radar, the system is capable of detecting low altitude aircraft at the radar's maximum range by mitigating curvature of the earth and terrain masking limitations. TARS provides a detection and monitoring capability along the United States-Mexico border, the Florida Straits, and a portion of the Caribbean in support of the Department of Defense Counterdrug Program. The primary agencies using the TARS surveillance data include U.S. Northern Command in support of Customs and Border Protection (Air and Marine Operations Center and Caribbean Air and Marine Operations Center) and U.S. Southern Command in support of Joint Interagency Task Force-South. In addition to its counterdrug mission, TARS surveillance data also supports North American Aerospace Defense Command's air sovereignty mission for the continental United States. TARS consists of four major parts: the aerostat and airborne support equipment; the radar payload; the tether and winch system; and the ground station. The aerostat used on the TARS program is a large fabric envelope filled with helium and air. The hull of the aerostat contains two chambers separated by a gas tight fabric partition. The upper chamber is filled with helium, a lighter-than-air gas, which provides the aerostat its lifting capability. The lower chamber is a pressurized air compartment (air ballonnet). The aerostat hull is constructed of a lightweight, Tedlar fabric that weighs only eight ounces per yard. The fabric is resistant to environmental degradation, minimizes helium leakage, and provides structural strength to the aerostat. There is also a pressurized windscreen compartment underneath the aerostat that contains and protects the radar. A sophisticated system of sensors, blowers and valves controls the air pressure within the air ballonnet, maintaining the aerostat's aerodynamic shape. The TARS program uses two different sizes of aerostats, categorized by volume. The 275,000 cubic foot, or 275K, aerostat is 186 feet long and 62.5 feet in diameter with a fin span of 68.6 feet. The 420,000 cubic foot, or 420K, aerostat is 208.5 feet long and 69.5 feet in diameter with a fin span of 75.5 feet. These aerostats can rise up to 15,000 feet mean sea level, while tethered by a single nylon and polyethylene constructed cable. The normal operating altitude varies by site, but the norm is approximately 12,000 feet MSL. Aerostat power is developed by an on-board, 400 Hertz generator. The aerostat also carries a 100-gallon diesel fuel tank. All systems, to include the generator are controlled via an aerostat telemetry link. The TARS program currently uses a Lockheed Martin, L-88A or L-88(V)3 radar. All radar data is transmitted to the ground station then digitized and fed to the various control centers for display. The ground station is where a flight director, seated before banks of meters and television screens, monitors the aerostat's performance. A doppler weather radar, wind profiler and ground weather station are installed at each site to support flight operations. Each site also obtains up-to-date forecasts and weather warnings from the Air Force Weather Agency. Operators launch the aerostat from a large circular launch pad containing a mooring system (fixed or mobile), depending on the site configuration. The mooring system contains a large winch with 25,000 feet of tether cable. During the launch sequence, the winch reels out the tether until the aerostat reaches operational altitude. When the aerostat is lowered, it is secured to a mooring tower. While moored, the aerostat weather vanes with the wind. The first aerostat were assigned to the Air Force in December 1980 at Cudjoe Key, Fla., with the original 250,000-cubic foot aerostat. An additional site was constructed and operated by the Air Force at Cape Canaveral, Fla., in 1983. This site was deactivated a few years later. During the 1980s, the U.S. Customs Service operated a network of aerostats to help counter illegal drug trafficking. Their first site was built at High Rock, Grand Bahamas Island, in 1984. The second site was built at Fort Huachuca, Ariz., in 1986. Before 1992, three agencies operated the TARS network: the Air Force, U.S. Customs Service and U.S. Coast Guard. Congressional language in 1992 transferred management of the system to the Defense Department, with the Air Force as executive agent. For security and safety reasons, air space around Air Force aerostat sites is restricted for a radius of at least two to three statute miles and an altitude up to 15,000 feet. This action saved the U.S. government several million dollars in annual operations and maintenance costs. The operational sites are located at Yuma and Fort Huachuca, Ariz.; Deming, N.M.; Marfa, Eagle Pass and Rio Grande City, Texas; Cudjoe Key, Fla.; and Lajas, Puerto Rico. The contract management office is located in Newport News, Va. and the

logistics hub is located in El Paso, Texas. General Characteristics Primary Function: Detection of low-level aircraft and surface targets Prime Contractor: The sites are currently operated and maintained under contract with ITT Systems Division, ILC Dover and Tethered Communications (TCOM, L.P.) manufacture the aerostat-envelopes. Lockheed Martin manufactures the radars. Volume: 275,000 and 420,000 cubic feet Tether Length: 25,000 feet Payload Weight: 1,200-2,200 pounds Maximum Detection Range: 200 nautical miles Date Deployed: 1978

\* **PROCESSING ENVIRONMENT** Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; ESRI ArcGIS 10.0.4.4000

#### ARCGIS ITEM PROPERTIES

- \* **NAME** radar\_site\_tars
  
- \* **LOCATION**
  - \* **ACCESS PROTOCOL** Local Area Network

#### Extents

##### EXTENT

**DESCRIPTION**  
publication date

##### GEOGRAPHIC EXTENT

**BOUNDING RECTANGLE**  
**EXTENT TYPE** Extent used for searching

##### EXTENT

##### GEOGRAPHIC EXTENT

**BOUNDING RECTANGLE**  
**EXTENT TYPE** Extent used for searching  
\* **WEST LONGITUDE** -107.864192  
\* **EAST LONGITUDE** -80.534910  
\* **NORTH LATITUDE** 32.026567  
\* **SOUTH LATITUDE** 24.696134  
\* **EXTENT CONTAINS THE RESOURCE** Yes

##### EXTENT IN THE ITEM'S COORDINATE SYSTEM

\* **WEST LONGITUDE** -12007386.928268  
\* **EAST LONGITUDE** -8965105.172282  
\* **SOUTH LATITUDE** 2838467.433404  
\* **NORTH LATITUDE** 3766798.464163  
\* **EXTENT CONTAINS THE RESOURCE** Yes

#### Resource Points of Contact

##### POINT OF CONTACT

**INDIVIDUAL'S NAME** Kevin Hlava  
**ORGANIZATION'S NAME** Argonne National Laboratory  
**CONTACT'S POSITION** GIS Assistant/Specialist  
**CONTACT'S ROLE** point of contact

##### CONTACT INFORMATION

**PHONE**  
**VOICE** 1-630-252-0060

##### ADDRESS

**TYPE** both  
**DELIVERY POINT** 9700 South Cass Avenue  
**DELIVERY POINT** EVS/Bldg 240  
**CITY** Argonne

ADMINISTRATIVE AREA  
IL POSTAL CODE 60439  
COUNTRY US  
E-MAIL ADDRESS khlava@anl.gov

## Resource Maintenance

RESOURCE MAINTENANCE  
UPDATE FREQUENCY as needed

## Resource Constraints

### CONSTRAINTS

#### LIMITATIONS OF USE

Acknowledgment of the Natural Resources Defense Council (NRDC) - Renewable Energy and Defense Geospatial Database (READ-Database), the Department of Defense (DoD), the United States Air Force (USAF). and Argonne National Laboratory (ANL) would be appreciated in products derived from this data.

## Spatial Reference

### ARCGIS COORDINATE SYSTEM

- \* TYPE Projected
- \* GEOGRAPHIC COORDINATE REFERENCE GCS\_WGS\_1984
- \* PROJECTION WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere
- \* COORDINATE REFERENCE DETAILS
  - PROJECTED COORDINATE SYSTEM
  - WELL-KNOWN IDENTIFIER 3857
  - X ORIGIN -22041545.367140558
  - Y ORIGIN -33272760.666301586
  - XY SCALE 135368852.55354118
  - Z ORIGIN -100000
  - Z SCALE 10000
  - M ORIGIN -100000
  - M SCALE 10000
  - XY TOLERANCE 0.001
  - Z TOLERANCE 0.001
  - M TOLERANCE 0.001
  - HIGH PRECISION true
  - WELL-KNOWN TEXT PROJCS["WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere",GEOGCS["GCS\_WGS\_1984",DATUM["D\_WGS\_1984",SPHEROID["WGS\_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Mercator\_Auxiliary\_Sphere"],PARAMETER["False\_Easting",0.0],PARAMETER["False\_Northing",0.0],PARAMETER["Central\_Meridian",0.0],PARAMETER["Standard\_Parallel\_1",0.0],PARAMETER["Auxiliary\_Sphere\_Type",0.0],UNIT["Meter",1.0],AUTHORITY ["EPSG",3857]]

### REFERENCE SYSTEM IDENTIFIER

- \* VALUE 3857
- \* CODESPACE EPSG
- \* VERSION 7.4.1

## Spatial Data Properties

### VECTOR

- \* LEVEL OF TOPOLOGY FOR THIS DATASET geometry only

### GEOMETRIC OBJECTS

FEATURE CLASS NAME radar\_site\_tars  
\* OBJECT TYPE point

\* OBJECT COUNT 12

#### ARCGIS FEATURE CLASS PROPERTIES

- \* FEATURE TYPE Simple
- \* GEOMETRY TYPE Point
- \* HAS TOPOLOGY FALSE
- \* FEATURE COUNT 12
- \* SPATIAL INDEX TRUE
- \* LINEAR REFERENCING FALSE

#### Data Quality

##### SCOPE OF QUALITY INFORMATION

RESOURCE LEVEL      dataset

#### Lineage

##### PROCESS STEP

**DESCRIPTION** Data was compiled using the Natural Resources Defense Council (NRDC) - Renewable Energy and Defense Geospatial Database (READ-Database) and the United States Air Force (USAF) Tethered Aerostat Radar System factsheet. Radar locations were more accurately positioned using Google Earth©.

##### PROCESS CONTACT

**INDIVIDUAL'S NAME** Kevin Hlava  
**ORGANIZATION'S NAME** Argonne National  
Laboratory **CONTACT'S POSITION** GIS  
Assistant/Specialist **CONTACT'S ROLE**  
processor

##### CONTACT INFORMATION

**PHONE**  
**VOICE** 1-630-252-0060

##### ADDRESS

**TYPE** both  
**DELIVERY POINT** 9700 South Cass Avenue  
**DELIVERY POINT** EVS/Bldg 240  
**CITY** Argonne  
**ADMINISTRATIVE AREA**  
**IL POSTAL CODE** 60439  
**COUNTRY** US  
**E-MAIL ADDRESS** [khlava@anl.gov](mailto:khlava@anl.gov)

##### SOURCE DATA

**RELATIONSHIP TO THE PROCESS STEP** used

##### SOURCE CITATION

**ALTERNATE TITLES**      <http://www.af.mil/information/factsheets/factsheet.asp?id=3507>

#### Distribution

##### DISTRIBUTOR

##### CONTACT INFORMATION

**INDIVIDUAL'S NAME** Kevin Hlava  
**ORGANIZATION'S NAME** Argonne National  
Laboratory **CONTACT'S POSITION** GIS  
Assistant/Specialist **CONTACT'S ROLE**

distributor

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DISTRIBUTION

FORMAT

\* NAME File Geodatabase Feature Class

TRANSFER OPTIONS

ONLINE SOURCE

LOCATION <http://www.af.mil/information/factsheets/factsheet.asp?id=3507>

Fields

DETAILS FOR OBJECT radar\_site\_tars

\* TYPE Feature Class

\* ROW COUNT 12

FIELD OBJECTID ►

\* ALIAS OBJECTID

\* DATA TYPE OID

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

\* FIELD DESCRIPTION

Internal feature number.

\* DESCRIPTION SOURCE

ESRI

\* DESCRIPTION OF VALUES Sequential unique whole numbers that are automatically generated.

FIELD Shape

\* ALIAS Shape

\* DATA TYPE Geometry

\* WIDTH 0

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Feature geometry.

DESCRIPTION SOURCE

ESRI

DESCRIPTION OF VALUES Coordinates defining the features.

FIELD NAME\_ABBREVIATION

- \* ALIAS NAME\_ABBREVIATION
- \* DATA TYPE String
- \* WIDTH 255
- \* PRECISION 0
- \* SCALE 0

#### FIELD NAME

- \* ALIAS NAME
- \* DATA TYPE String
- \* WIDTH 255
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Radar Type

#### FIELD NOTES

- \* ALIAS NOTES
- \* DATA TYPE String
- \* WIDTH 255
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Notes

#### FIELD LATITUDE

- \* ALIAS LATITUDE
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Latitude

#### FIELD LOCATION

- \* ALIAS LOCATION
- \* DATA TYPE String
- \* WIDTH 255
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

City Name

#### FIELD LONGITUDE

- \* ALIAS LONGITUDE
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Longitude

#### FIELD STATE

- \* ALIAS STATE
- \* DATA TYPE String

\* WIDTH 255  
\* PRECISION 0  
\* SCALE 0  
FIELD DESCRIPTION  
State Name

FIELD COUNTRY  
\* ALIAS COUNTRY  
\* DATA TYPE String  
\* WIDTH 255  
\* PRECISION 0  
\* SCALE 0  
FIELD DESCRIPTION  
Country Name

#### Metadata Details

METADATA LANGUAGE English (UNITED STATES)  
SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset  
SCOPE NAME \* dataset  
\* LAST UPDATE 2012-05-29  
ARCGIS METADATA PROPERTIES  
METADATA FORMAT ArcGIS 1.0  
METADATA STYLE FGDC CSDGM Metadata  
STANDARD OR PROFILE USED TO EDIT METADATA FGDC  
CREATED IN ARCGIS 2012-01-24 10:49:27  
LAST MODIFIED IN ARCGIS 2012-05-29 11:04:23  
AUTOMATIC UPDATES  
HAVE BEEN PERFORMED Yes  
LAST UPDATE 2012-05-29 11:03:52

#### Metadata Contacts

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#### Thumbnail and Enclosures

THUMBNAIL  
THUMBNAIL TYPE    JPG