

AIROBSTM

Airfield Obstructions Tracking,
Analysis, and Management System

Overview of Background, Theory, and
Functionality
July 2004

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Overview: What is AIROBS?

- An ESRI ArcGIS-based tool for use by the Base/Command airfield planner to view, analyze, manage, and report airfield obstructions information.
- AIROBS responds to the Air Force's Airfield Obstruction Reduction Initiative (AORI).

The Airfield Obstruction Reduction Initiative (AORI)

Excerpt from the AORI report:

"In July, 1998, a pilot lost his life because an airfield navigation aid was mounted in the flight path on non-frangible supports... the mishap drew the attention of the Chief of Staff, who directed corrective action... as a result, ILE issued a USAF-wide data call to identify all obstructions...and make recommendations for improvements"

AORI Goals

- Identify and remove airfield obstructions.
- Develop efficient process to review/update data for the obstructions that must remain or will be removed in the future (waivered or permissible).
- Establish standardized system for collecting and reporting airfield waiver data.
- Build a versatile database for review and action that allows Bases to view obstructions on an interactive map, generate automated waiver requests, and analyze new construction.

Some AIROBS Characteristics

- User interface is map-centric
- Built with Visual Basic, ArcGIS COM objects
- Stores obstructions data in Access database, SDSFIE tables
- Displays the Base's CIP or base map
- Analyzes obstructions "on-the-fly"
- Uses multiple airspace regulatory criteria
- Tracks and reports airfield waivers
- Launches ArcView to produce E-Tab maps

Who will use AIROBS?

- Base Community Planners
 - Responsible for base airfield obstruction management
- Airfield Operations
 - Day-to-day manager of airfield operations and obstruction impacts
- Safety
- Airfield Obstruction NCOs
 - Operator and User
 - Obstruction manager at some Bases

What will AIROBS do for them?

- Automated Siting Analysis
- Prepare Form 582 (New Obstruction)
- Complete Form 583 (Annual Report)
- Priority Area report
- Uniform obstruction analysis and data storage
- Mapping display of all obstructions with images

Why do we need AIROBS?

- Existing obstruction data is often suspect and in multiple formats, difficult to review and use
- Managing airfield obstructions is a pain
 - It's a laborious process to update data with current tools
 - Large data requirements
 - Limited time and staff to stay on top of it
- Manual siting analysis is a difficult and often inaccurate exercise

Where did AIROBS come from?

- Developed by CH2M HILL at direction of, and under contract to, AFCEE and USAFE
- Prompted by Rhein Main Initiative to transfer AF facilities from Rhein-Main AB to Ramstein AB and Spangdahlem AB
- AIROBS functional requirements, database design, “look and feel”, etc. were specified by USAFE and implemented by CH2M HILL

At USAFE, AIROBS development was part of a larger obstructions management delivery order

- Acquire and prepare source files from the bases (CAD files, spreadsheets, photos, scans, etc.)
- Fly the Bases, develop digital orthophotography and terrain models
- Develop regulatory airspace surfaces for various criteria, as GIS layers
- Perform GIS analyses to identify off-base terrain and vegetation obstructions
- Integrate on-base and off-base obstructions data into a comprehensive database

USAFE Aerial Mapping

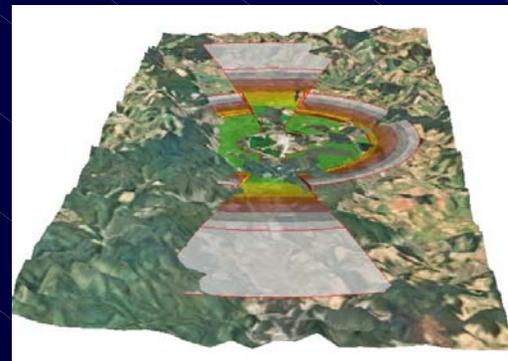


Ramstein AB



Spangdahlem AB

- Flights conducted with support from local aerial survey firms
- Coverage: 36km x 15km at each base
- 1-meter resolution, color
- Digital terrain model includes tree canopies



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Airfield Obstruction Definition

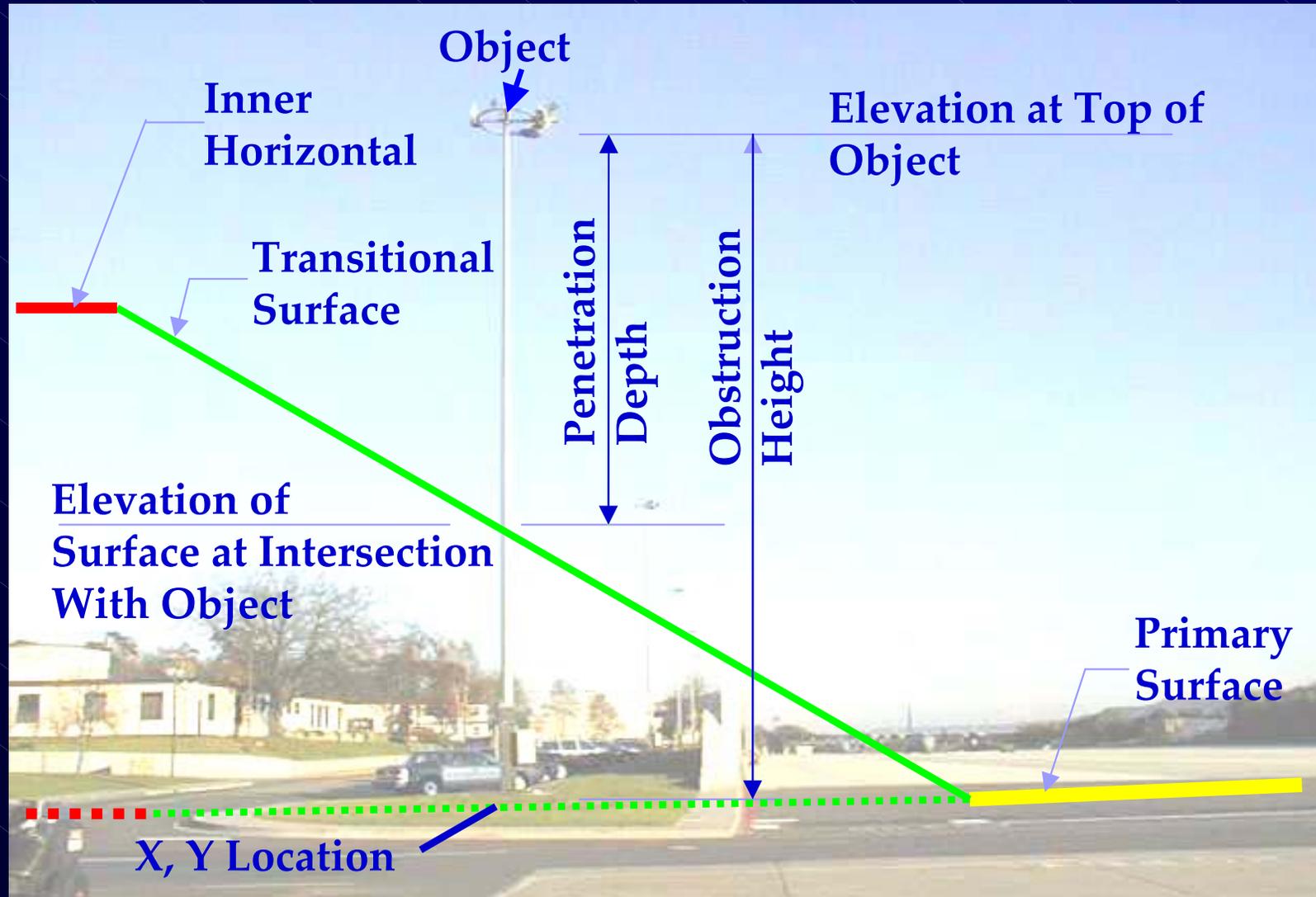
■ From UFC 3-260-1, 3.13.2:

"An object, either man-made or natural, which projects above an imaginary surface is an obstruction."

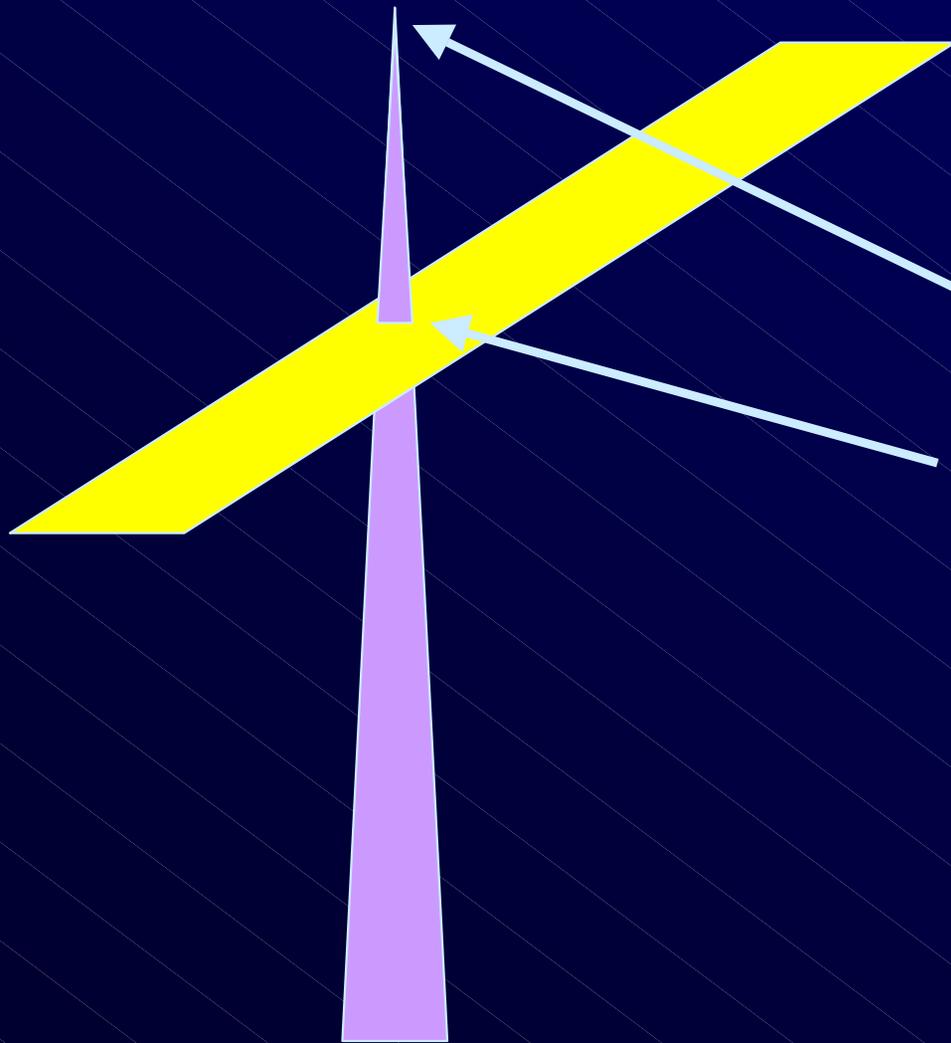
■ The imaginary surfaces are:

- Primary Surface.
- Approach-Departure Surface
- Inner Horizontal Surface.
- Conical Surface
- Outer Horizontal Surface.
- Transitional Surface
- The graded portion of the Clear Zone.

AIROBS Analysis Approach



AIROBS Analysis Approach



Rule:

An object is an *obstruction* if the elevation at top of object

>

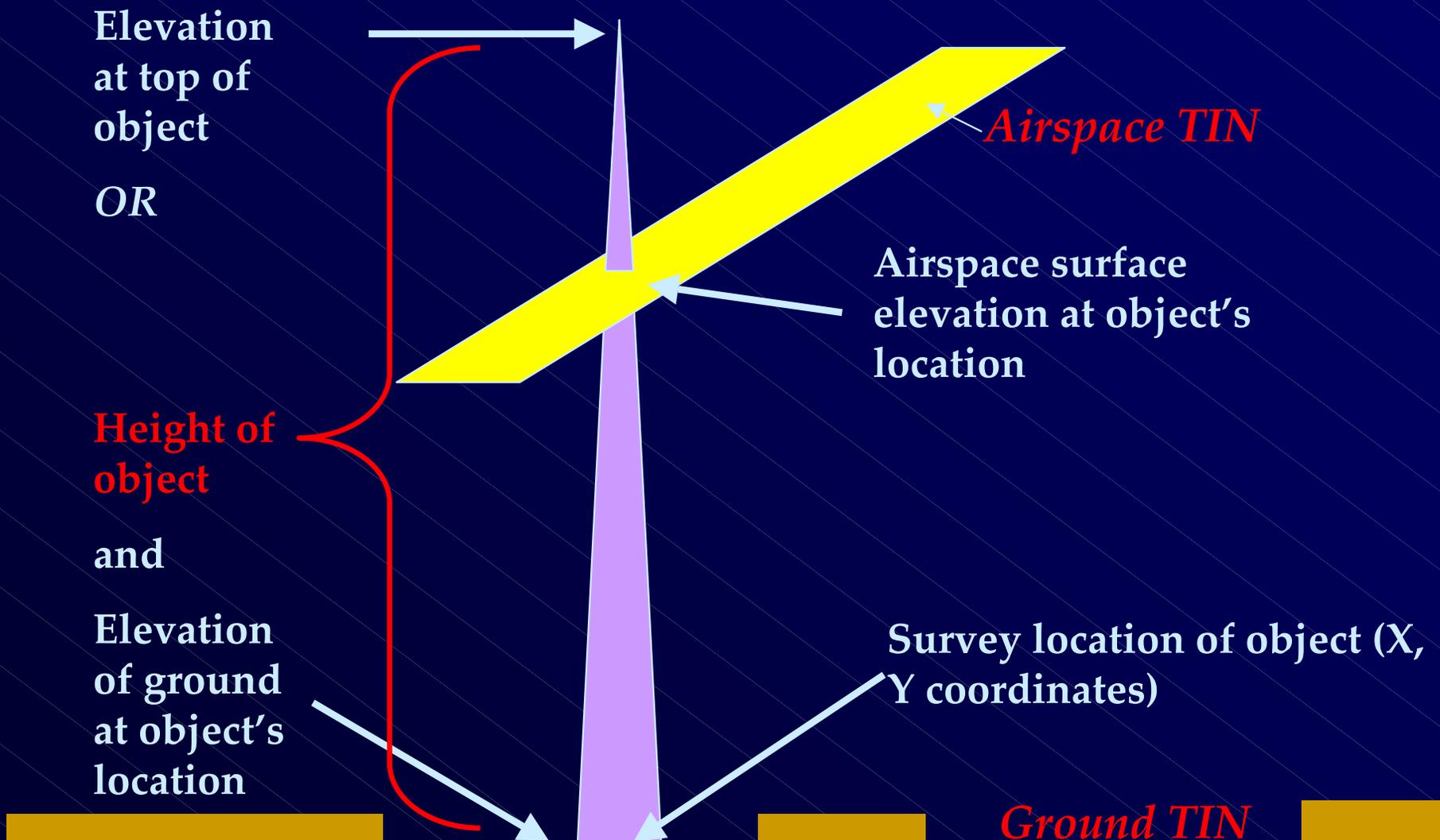
the elevation of regulatory surface where it intersects the object

If so, then:

- Calculate Penetration Depth
- Determine which surface is violated

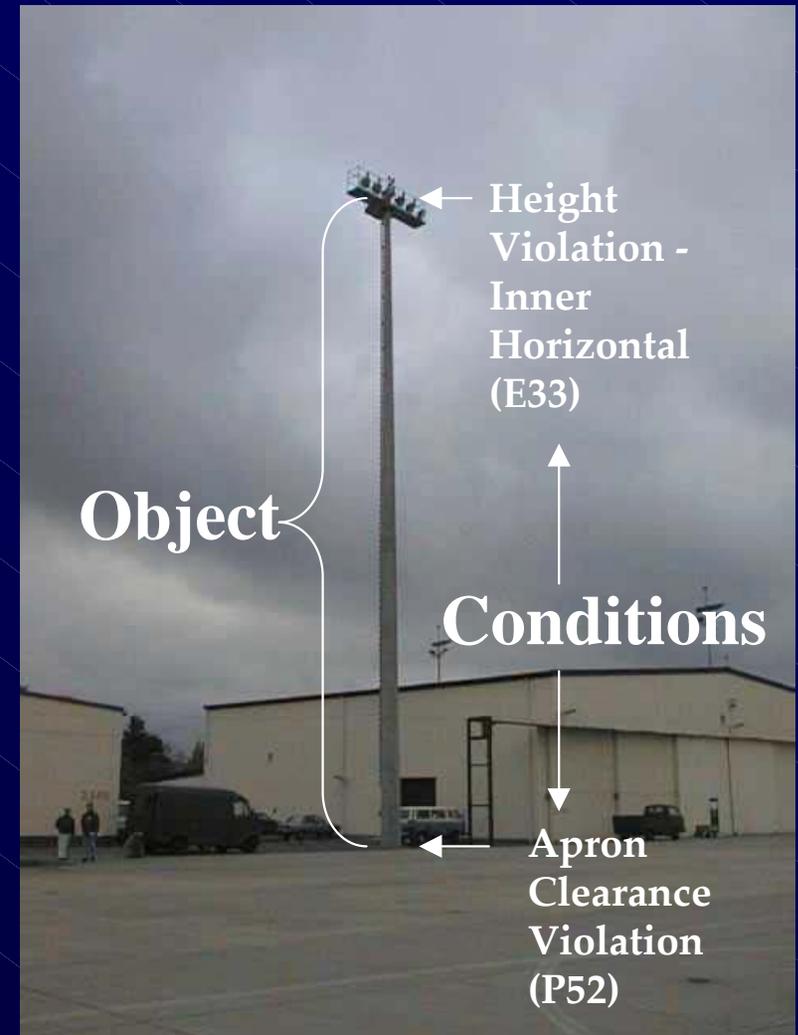
AIROBS Analysis Approach

Minimum data required to perform this calculation



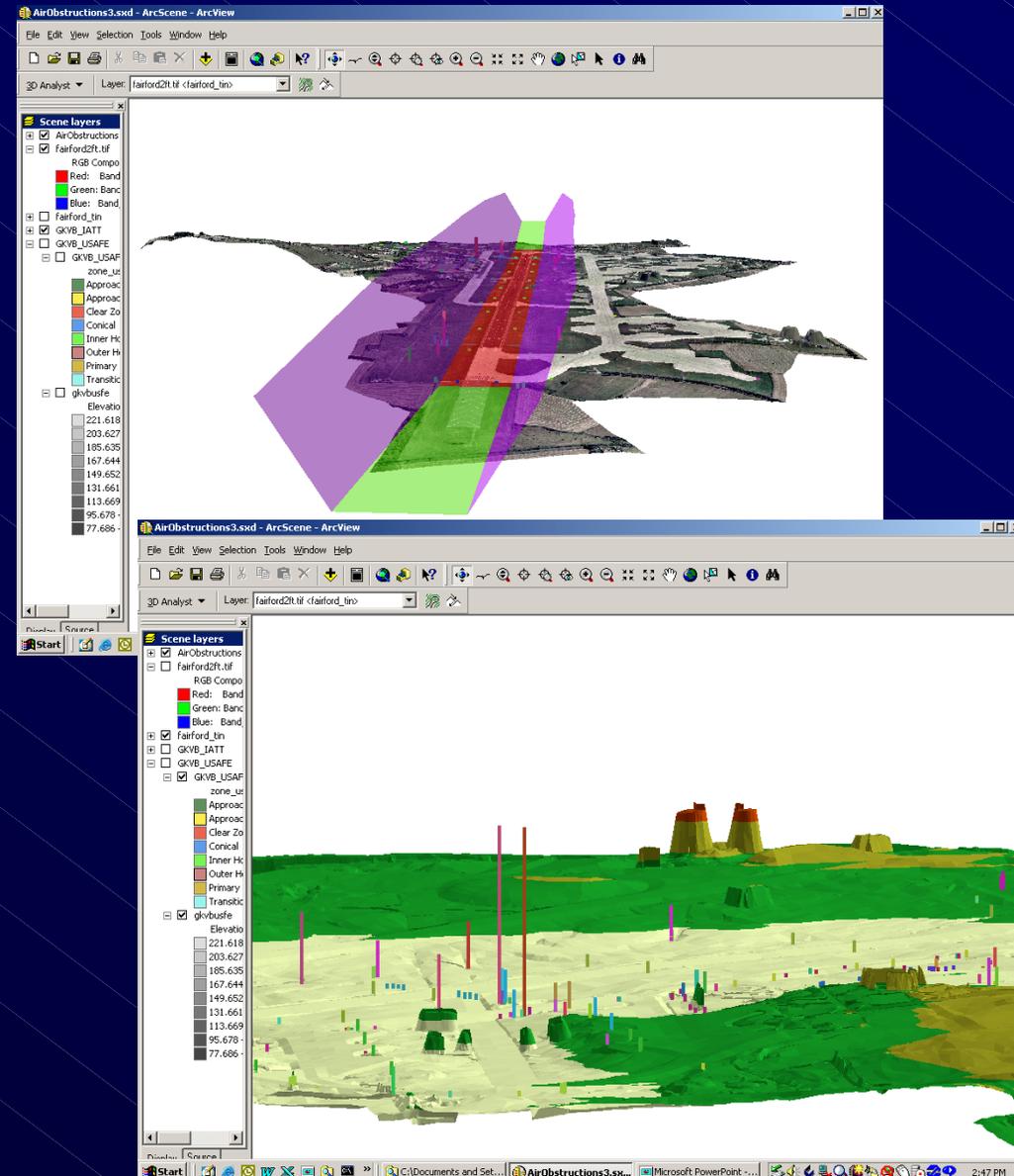
Obstructions vs. Waivers

- Obstructions are Physical Objects
- Waivers are Conditions
- AIROBS manages objects that have multiple or single conditions (e.g. violations against multiple surfaces)



AIROBS analysis method reduces risk of miscalculations

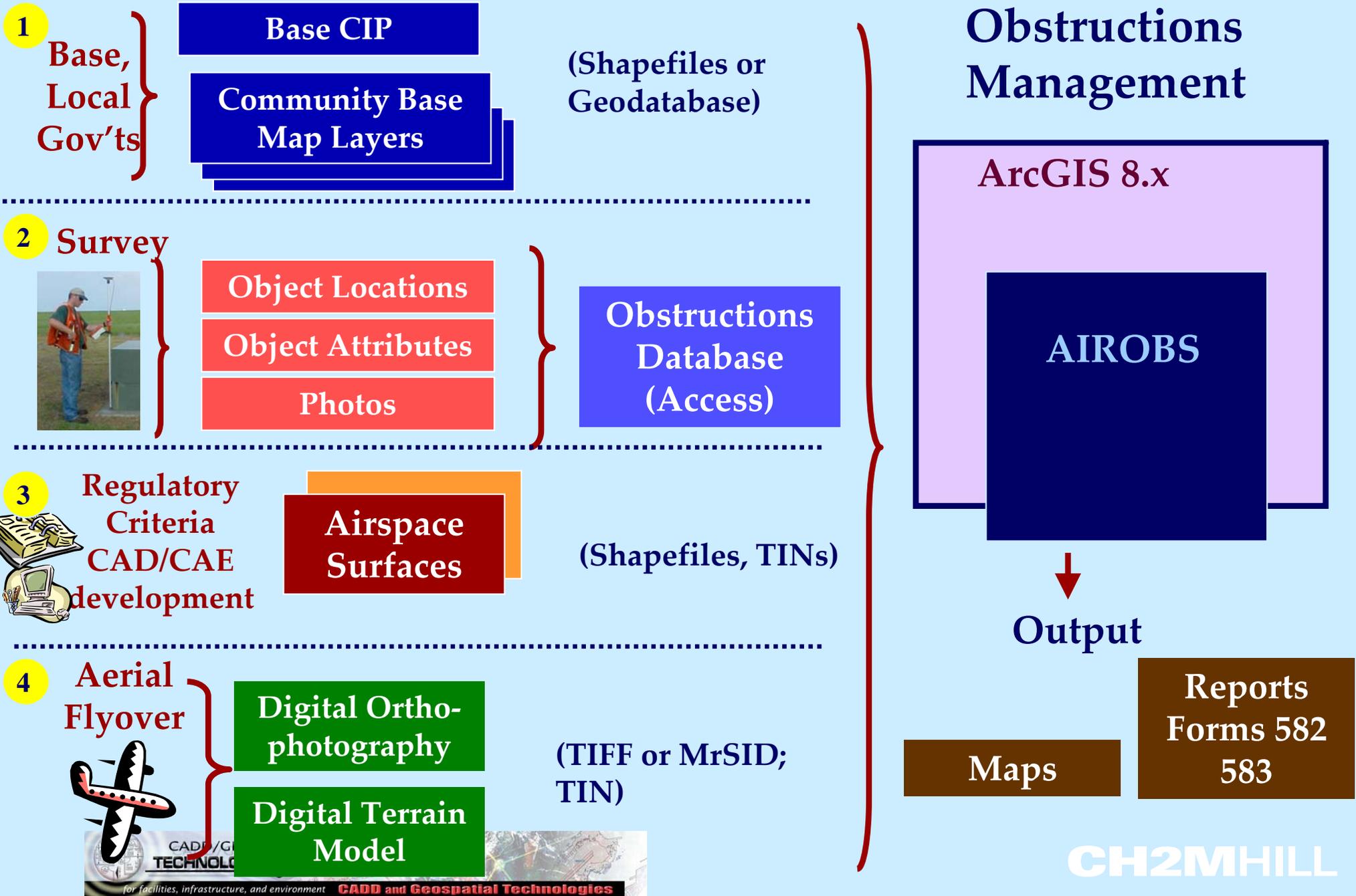
- Uses a ground TIN for accurate elevations
- Uses a 3-D TIN for a truer representation of the airspace surfaces
- Uses a true runway profile



How AIROBS Uses ArcGIS

- Built around ArcGIS COM objects
- Uses the mapping, calculation, query, and other functions of ArcView GIS (does not reinvent the wheel)
- Uses an ArcView project file (.mxd) that allows users to define which, and how, layers are displayed (including ETab map)
- Uses the Base's existing CIP for map background
- User can launch ArcView from AIROBS for general-purpose mapping or investigation

Base Level Data Flow



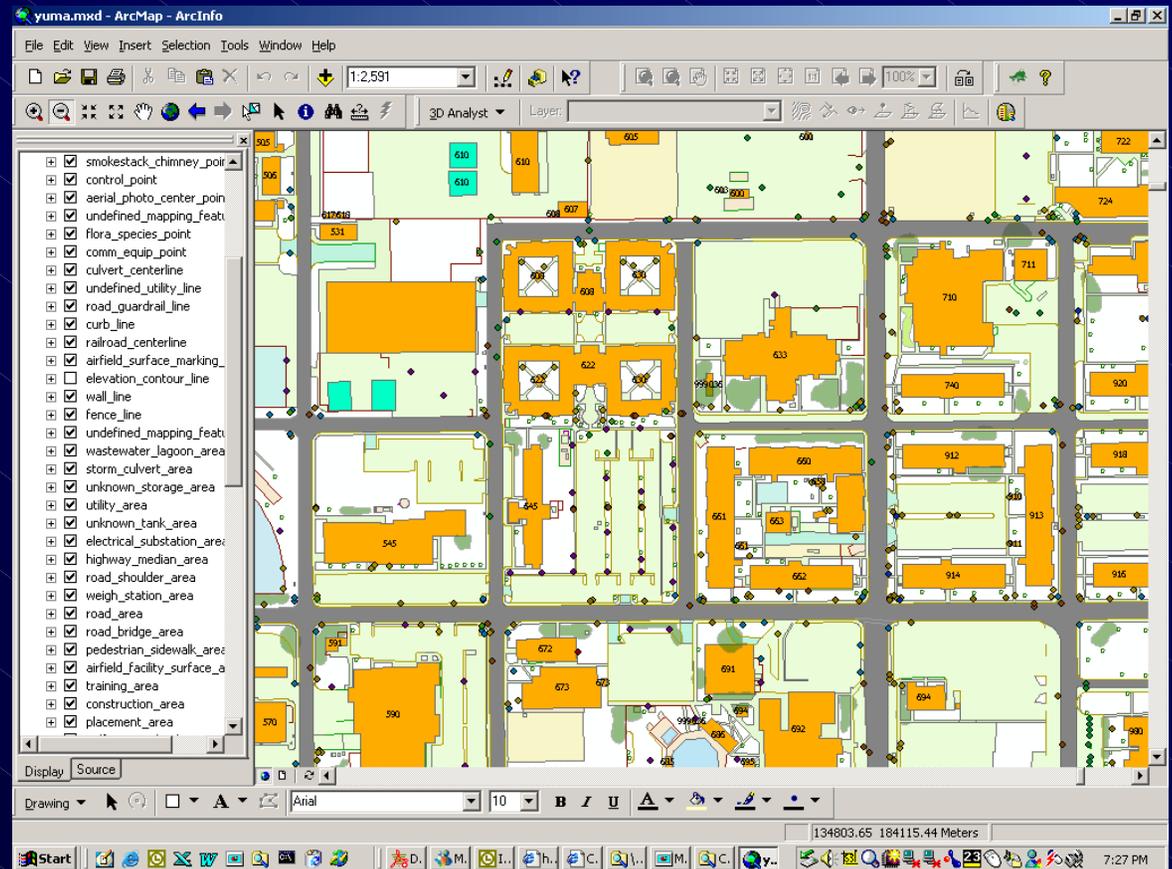
AIROBS Data Requirements

- 1 Base Map layers (CIP)
- 2 Obstructions objects
- 3 Airspace regulatory surfaces
- 4 Digital orthophotography and digital terrain model (optional)

AIROBS Data Requirements

1 Base Map (CIP) layers

- Base limits
- buildings
- streets
- vegetation
- airfield features
- etc ...



AIROBS Data Requirements

2 Obstructions objects

Aerial Survey Methods

RTK-GPS Survey



Location (X,Y,Z)
Height
Description
Photo

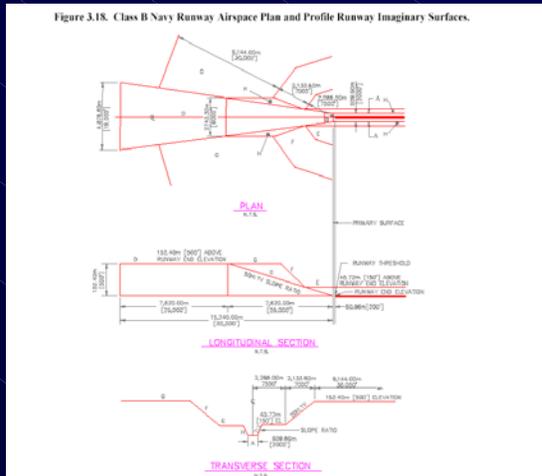


Existing Data Sources

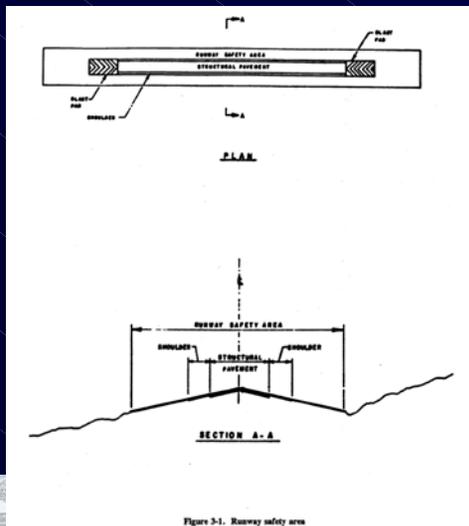
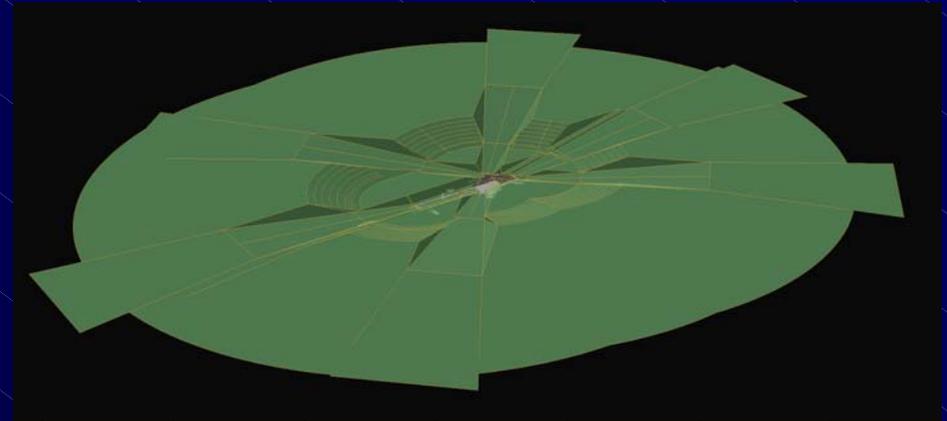
OID Number	OID Number	Description	OID Coordinates	Criteria violated	Freight	Excludes - A/E (ft)	Excludes - A/E (ft)	Distance from CE (ft)	Distance from CE (ft)	Distance from edge (ft)	Distance from edge (ft)	Distance from roof of structure (ft)	Distance from roof of structure (ft)	Excludes of structure surface (ft)	Excludes of structure surface (ft)	Ground obstructions (ft)	Height of obstructions (ft)	Height of obstructions (ft)	Distance criteria to retained (ft)	Distance criteria to retained (ft)	Remarks
1	1	VEHICLE CONTROL SIGN RUNWAY AHEAD	F-6	AFMAN 33-903 VUL-T2-2	Y 204 7871 83	280.4	84.8	274.4				233	7851	6.4	2						Run T 18
8	8	VEHICLE CONTROL SIGN STOP SIGN	F-6	AFMAN 33-903 VUL-T2-2	N 234 7871 82	266.5	83.5	230.5				233	7831	1.7	15						
9	9	WIND SOCK	F-6	AFMAN 33-903 VUL-T2-2	Y 204 7874 925	482.8	90.8	328.9				234	786.9	4.0	13						
11	11	VEHICLE CONTROL SIGN RUNWAY AHEAD	F-2	AFMAN 33-903 VUL-T2-2	N 204 7878 692	238.7	91.9	218.7				233	7853	13	5						
10	10	BARREX MARKER, BAK 2	F-2	AFMAN 33-903 VUL-T2-2	N 204 7878 49	47.5	28.8	64.5				233	7855	6.3	1						
14	14	BARREX, BAK 3 SHEAVE	F-2	AFMAN 33-903 VUL-T2-2	N 204 7878 25.3	83.0	51	10.0				234	7861	6.3	1						
15	15	JUNCTION BUI FOR RUNWAY VISUAL RANGE	F-2	AFMAN 33-903 VUL-T2-2	N 204 7874 94	539.1	162.1	484.1				234	7861	6.4	2						
16	16	RUNWAY VISUAL RANGE (BVR)	F-2	AFMAN 33-903 VUL-T2-2	Y 204 7874 92	520.2	138.4	451.2				234	7861	4.8	6						
17	17	RUNWAY VISUAL RANGE (BVR)	F-2	AFMAN 33-903 VUL-T2-2	Y 204 7871 59	489.2	91.0	332.2				233	7851	5.5	9						
18	18	JUNCTION BUI FOR RUNWAY VISUAL RANGE	F-2	AFMAN 33-903 VUL-T2-2	N 204 7871 59	434.0	90.8	340.6				233	7851	6.4	2						
12	12	RUNWAY DISTANCE MARKER KNOWSING	F-2	AFMAN 33-903 VUL-T2-2	Y 204 7874 51	161.0	28.8	94.0				233	7849	13	5						
22	22	JUNCTION BUI FOR VUL LIGHTS	F-2	AFMAN 33-903 VUL-T2-2	N 204 7871 84	276.4	61.8	202.6				233	7841	11	23						
24	24	RUNWAY DISTANCE MARKER KNOWSING	F-6	AFMAN 33-903 VUL-T2-2	Y 233 7848 58.6	164.7	28.8	93.7				232	7825	13	5						
27	27	VEHICLE CONTROL SIGN RUNWAY AHEAD	F-6	AFMAN 33-903 VUL-T2-2	N 233 7848 87.3	288.4	65.7	214.4				232	7822	14	4.5						
28	28	ANTI-WHIRL TANK (FOR BARREX BLDG)	F-8	AFMAN 33-903 VUL-T2-2	N 233 7848 63.9	203.7	41.7	151.7				232	7858	13	5						
29	29	BARREX BLDG, BAK 13	F-8	AFMAN 33-903 VUL-T2-2	N 233 7848 58.2	191.0	36.0	119.0				232	7858	2.7	3						
30	30	BARREX MARKER, BAK 13	F-8	AFMAN 33-903 VUL-T2-2	N 233 7848 47.5	155.0	25.3	82.0				232	7858	13	5						
31	31	MANHOLE FOR BAK 13 SHEAVE	F-8	AFMAN 33-903 VUL-T2-2	N 233 7848 51	161.0	28.8	94.0				232	7858	6.0	8.5						

AIROBS Data Requirements

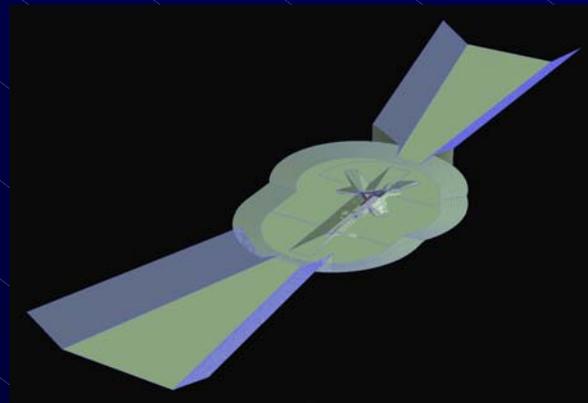
3 Airspace regulatory surfaces



UFC

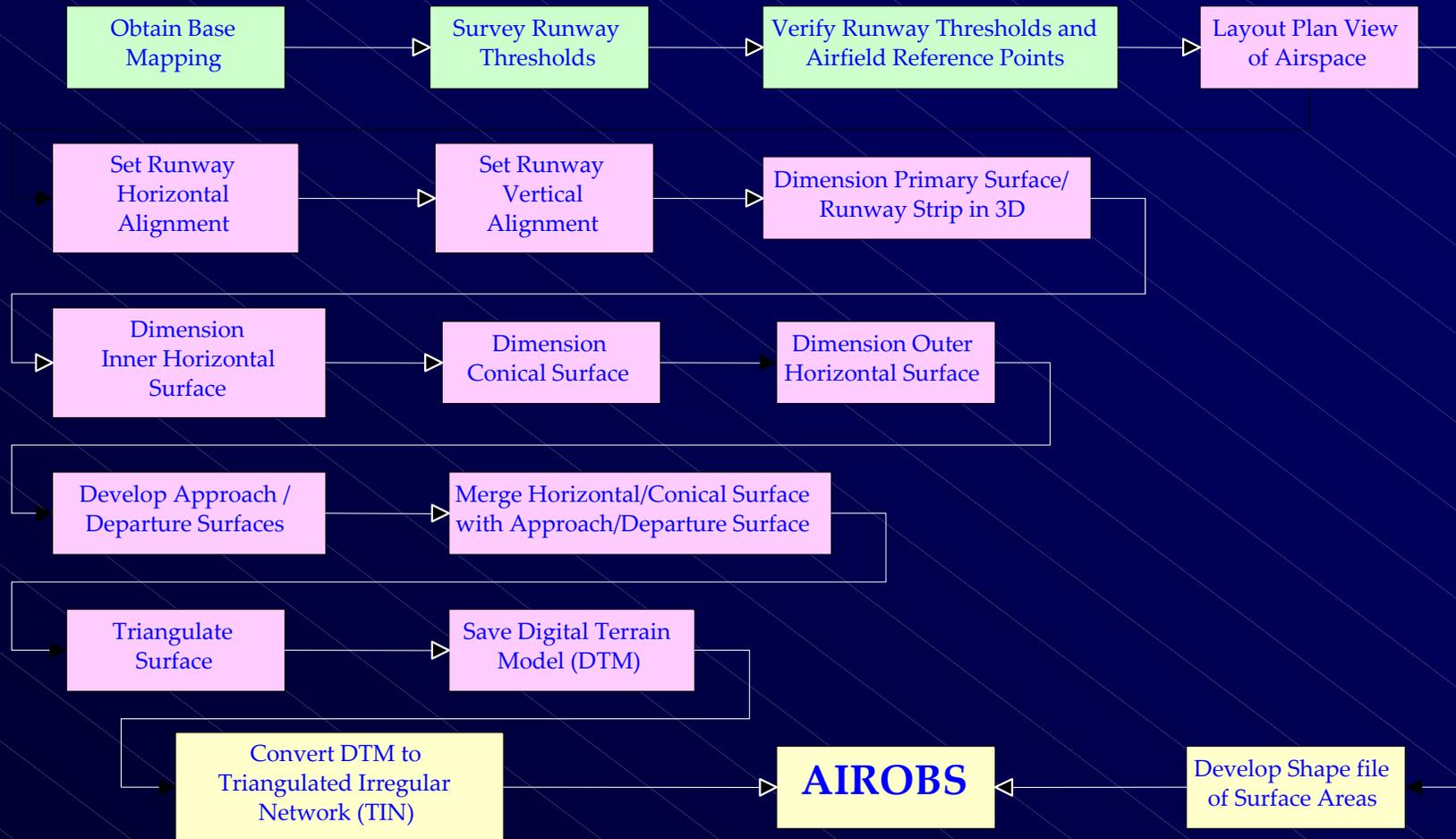


FAA



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Developing airspace surfaces can involve several technical steps



Key

Data Collection

3D CADD

GIS



for facilities, infrastructure, and environment

ENTER

CADD and Geospatial Technologies

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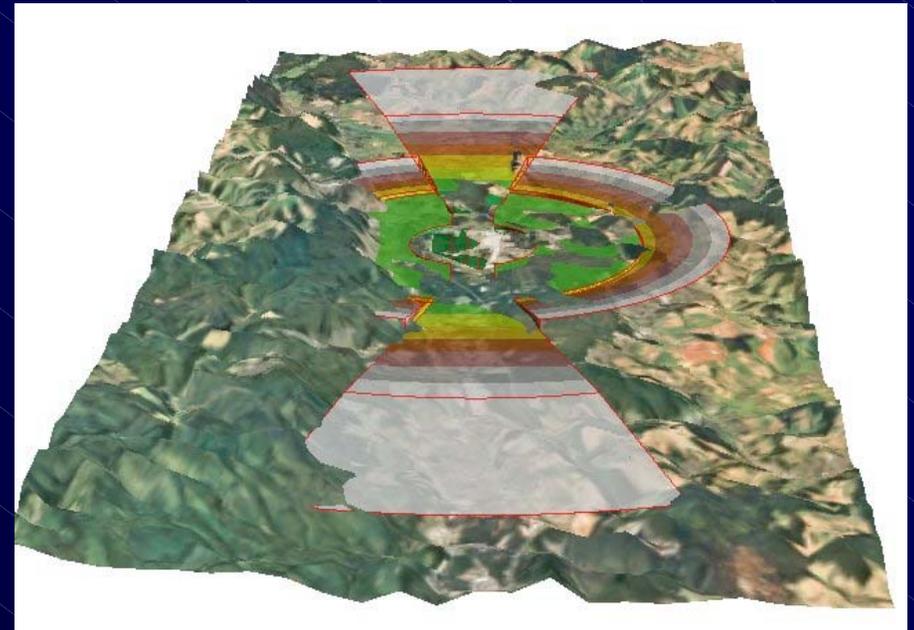
AIROBS Data Requirements

4 Digital orthophotography and terrain model

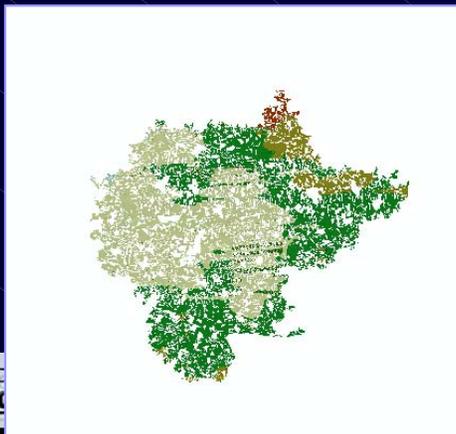
Aerial



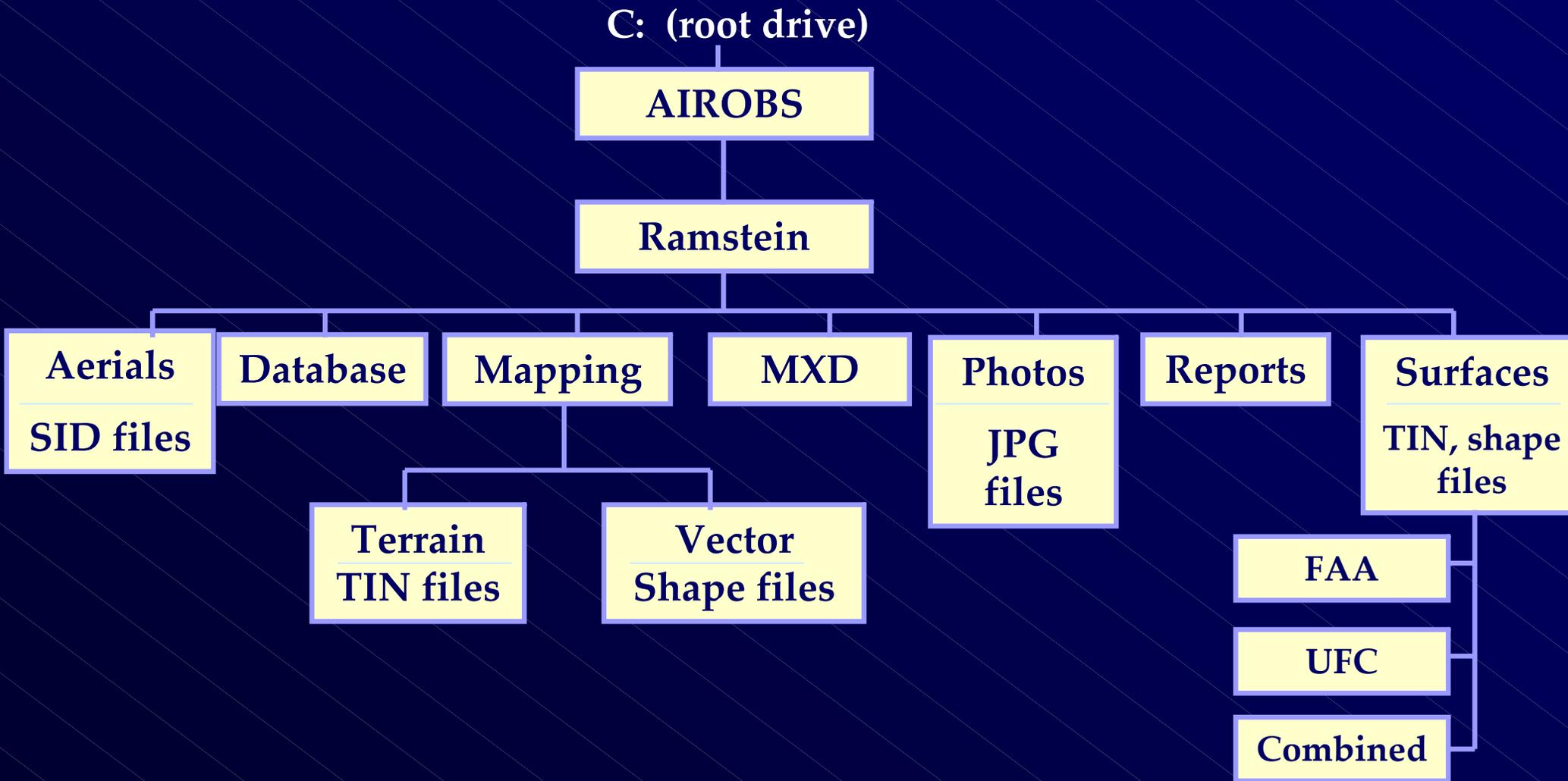
3-D View of Both



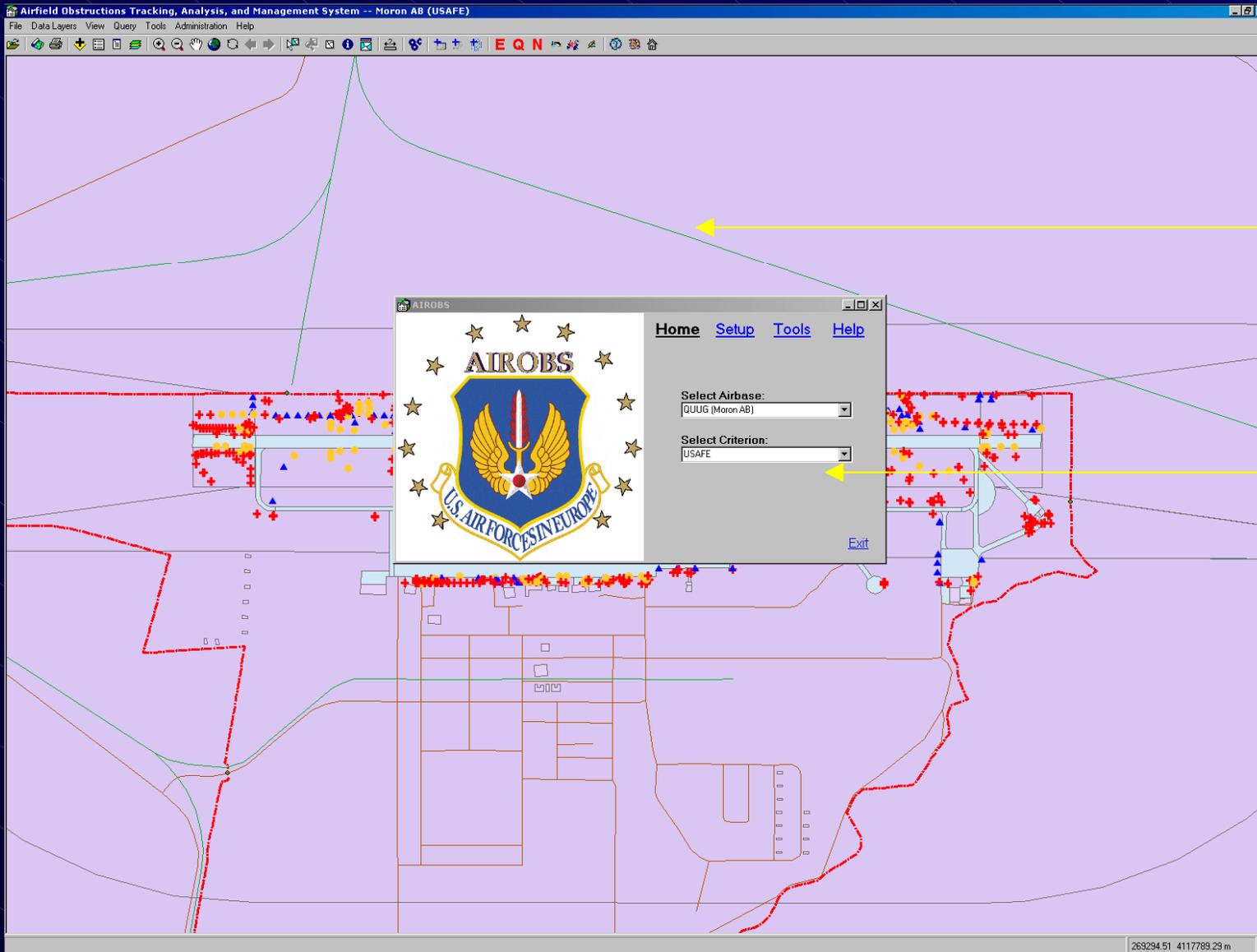
Ground TIN File



Typical Directory Structure for Data Storage



Opening Screens



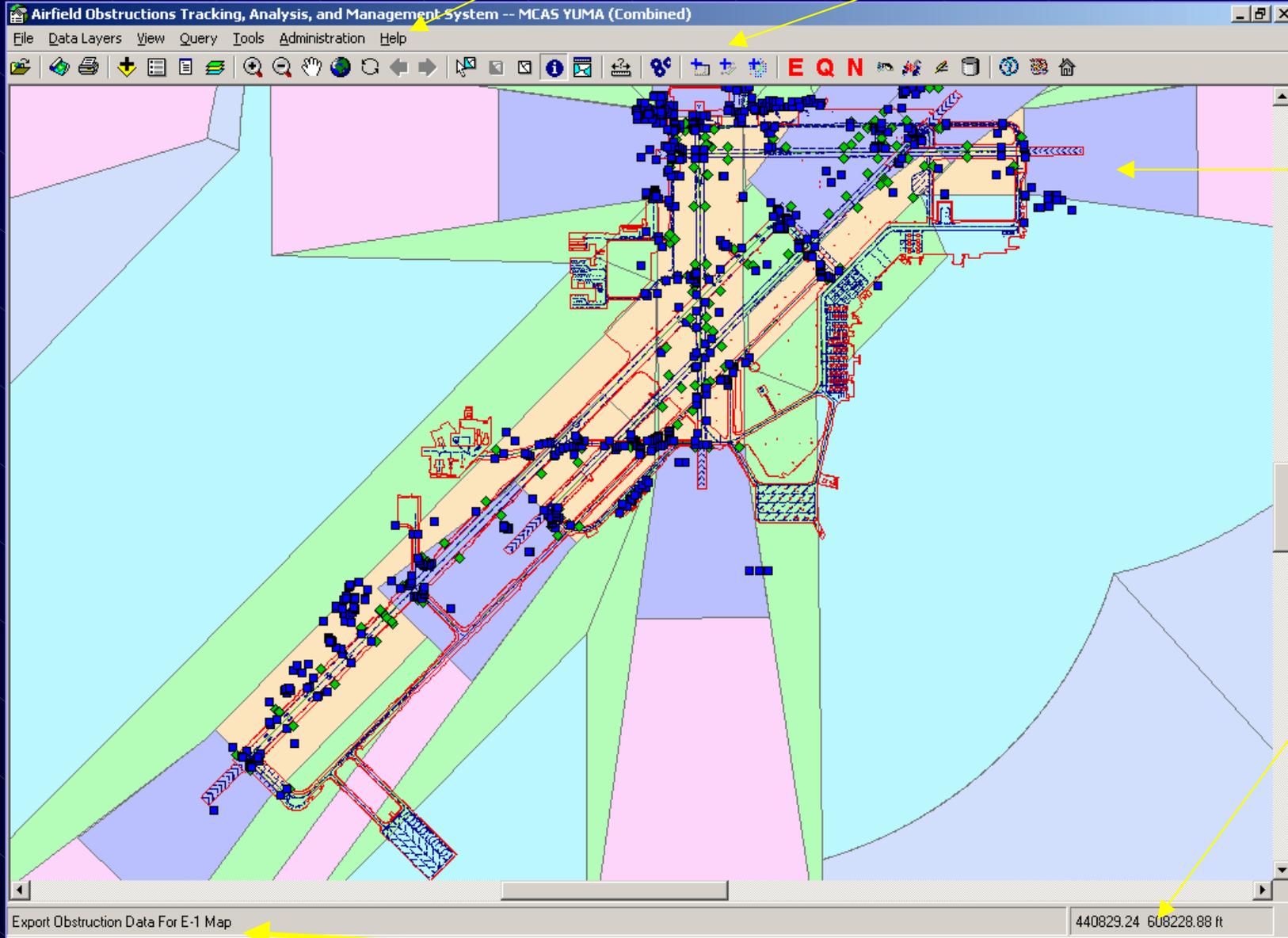
Map Screen

Menu Screen

Map Screen

Pull-down menus

Buttons and tools



Map interface

X,Y map location of cursor

Description of action

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Menu Screen

Selecting Airbase and Criterion

Assigning data files

Obstruction Analysis
Management

Queries

Reports

User Manual



Close the program

Setup

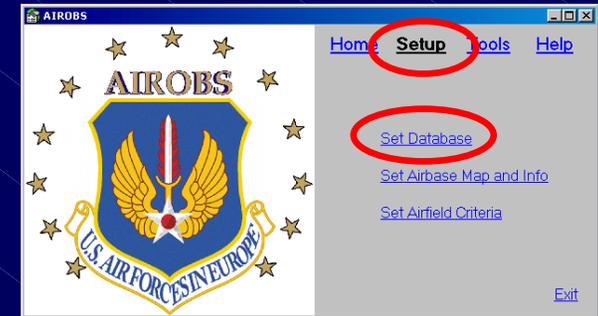


Imports
Obstruction
Database

Import Mapping,
Ground
Surface, & Priority
Areas

Set Criteria for
Evaluation

Set Database



Database

Database: Browse

Password:

Back Next Close

Select Access Database

Set Password
for Database, if applicable

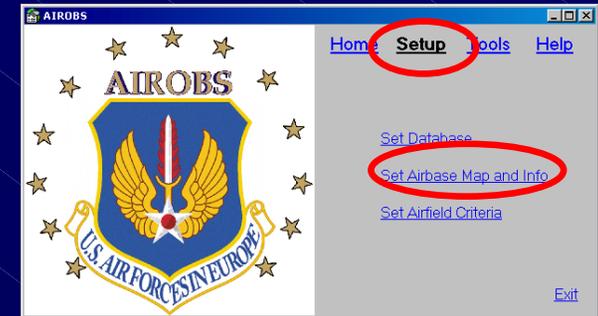
Default Airbase

Select Airbase:

Back Finish Close

Select the Base to which this
database applies

Set Airbase Map



Set Airbase Map and Info

Basic Info

Country:

Airbase ID: Parent Airbase ID:

Airbase Name:

Airbase Basemap File:

Airbase Ground Surface TIN File:

Priority Risk Areas Shape File:

Runway Centerline Shape File:

← GIS *.mxd file

← 3d Model of Ground*

← GIS Shape Files

* If available - not required

Set Airfield Criteria

Set Airfield Criteria

Applicable Criteria

Available Criteria:

Host Nation

Selected Criteria:

IAIT
ICAO
USAFE

Edit

Criterion Detail

Airspace Surface TIN File: C:\AIROBS\Moron_AB\Surfaces\USAFE\ Browse

Airspace Surface Shape File: C:\AIROBS\Moron_AB\Surfaces\USAFE\ Browse

Taxiway/Apron Clearance Shape File: C:\AIROBS\Moron_AB\Surfaces\USAFE\ Browse

Apply Cancel Close

Selection of Data files for each criteria

3D Model of Airspace

2D GIS Shape File

Set Clearance Zones - Apron, Taxiway, Runway

Tools

Select and edit previously analyzed obstructions

Database queries of obstructions

Batch or individual analysis of airfield objects

Create individual and annual waiver reports

Export data for waiver mapping



Edit Existing Obstructions

Edit Obstructions

Existing Obstructions

- QUUG004 (PAPI units / Visual Air Navigational Facilities)
- QUUG005 (PAPI units / Visual Air Navigational Facilities)
- QUUG006 (RVR / SAF Transmissiometer Facilities)
- QUUG007 (Vehicle Control Sign: "STOP HERE")
- QUUG008 (SAF ILS Glide Slope Antenna (ILS GP 20 antenna))
- QUUG009 (Garbage)
- QUUG010 (Sign Post / Sign "PROHIBIDO EL PASO. ZONA DE...")
- QUUG011 (Wind cone)
- QUUG012 (Tree)
- QUUG013 (OLD Junction Box in Wood Post Electrical (Three w...))

Edit Delete Close

Select by Obstruction ID and Name

Edit Obstruction

Basic Info

Obstruction Number: QUUG005

Obstruction Classification: Permissible Deviation Help

Waiver Status: Date:

Waiver Reference:

Installation Date:

Construction Type: Permanent

Obstruction Description and Comments: PAPI units / Visual Air Navigational Facilities

Violations: IAIT: IP (0.05) ICAD: A (0.05) Priority Area: PA1 Obstruction Frangible: YES

Corrective Action Information

Project/Work Order Number:

Estimated/Programmed Cost:

FIM Rating:

ORM Ranking:

Estimated Removal Date: FY

Survey Information

Point 1 of 4 Add Delete

Name: A74 Survey Date: 10/18/2001

X Coord: 268323.375 Height: 1.065000057220

Y Coord: 4118776.5 Ground Elevation: 81.39710235595

Frangible: Yes Top Elevation: 82.4621

Coord. Grid: K-14 Note: Calculated fields are red.

Description: PAPI units / Visual Air Navigational Facilities

Distance Measurements

Runway/Taxiway Name	To Centerline	To Threshold
Runway 02/20	60.78	385.84

Image 1 of 1

OK Save Cancel

Edit Obstruction Form

Query Existing Obstructions

Query Obstructions

Single Obstruction: QUUG001

All Obstructions:

Obstruction Type: Permanent Waivers Permissible Deviations Unapproved Obstructions Temporary Waivers Exemptions

Priority Areas: Priority Risk Area 1 Priority Risk Area 2 Priority Risk Area 3

Surface Violated: [A] Primary Surface [B] Runway Clear Zone [C] Approach Surface (Sloped) [D] Approach Surface (Horizontal) [E] Inner Horizontal Surface [F] Conical Surface [G] Outer Horizontal Surface [H] Transitional Surface [P] Parking Clear Area [T] Taxiway Clear Area

A total of 69 obstructions meeting the query criteria.

Summary by obstruction type:
69 temporary waivers

Summary by priority risk area:
69 obstructions in priority risk area 2

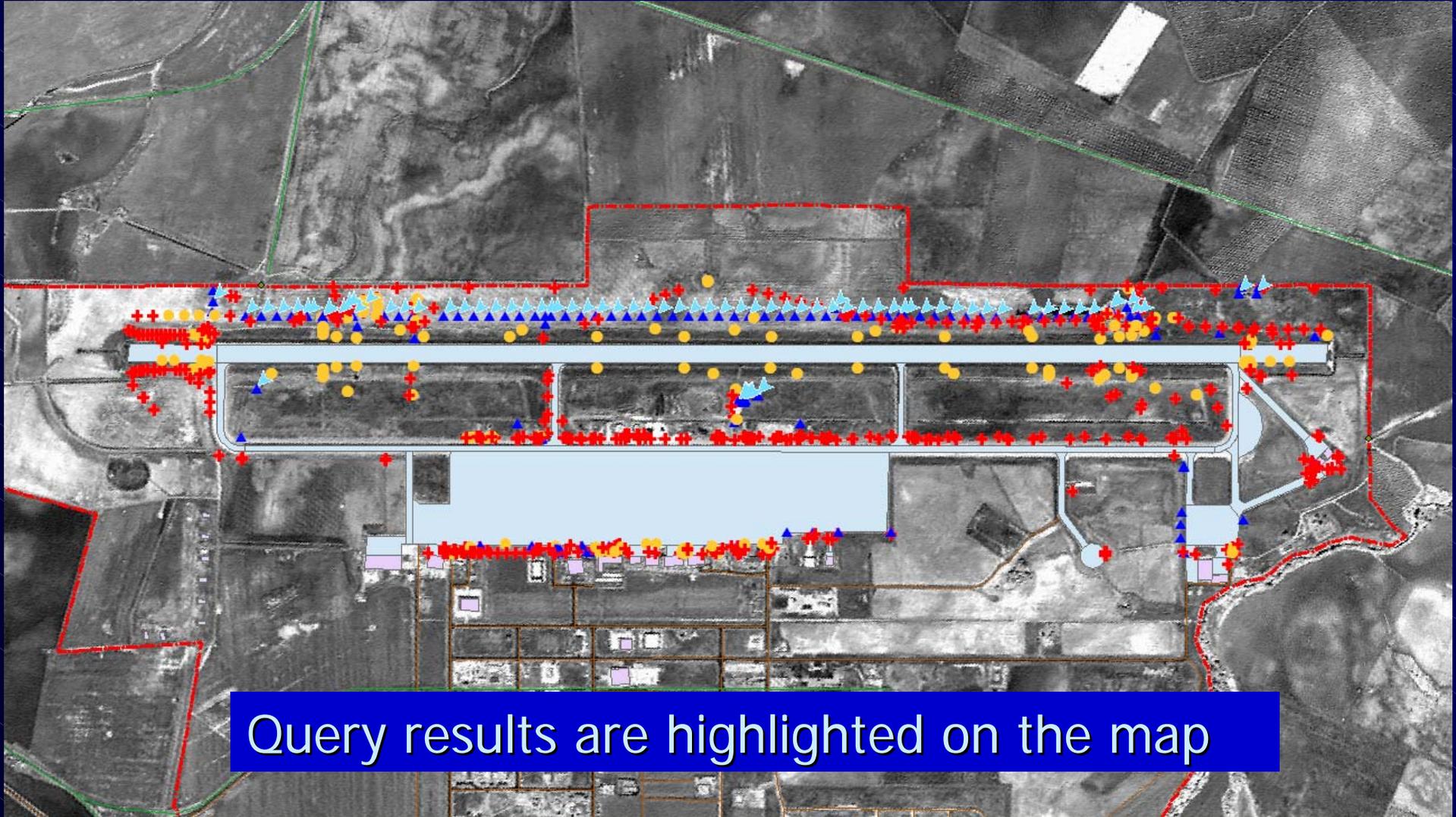
Summary by surface:

What type of status
(can select all)

Of the obstructions queried,
how many violate the
selected surface areas

Results

Query Existing Obstructions



Obstruction Analysis

Analyze Obstructions

Select Data Source

Existing Structures in Database

New Siting Analysis

X Coord: Y Coord:

Height: Ground Elevation:

Select Analyses and Criteria

Applicable Criteria:

- IAIT
- ICAD
- USAFE

Selected for Analyses:

Select Analyses:

Priority Risk Areas Airspace Surface Taxiway/Apron Clearance

Back Analyze Close

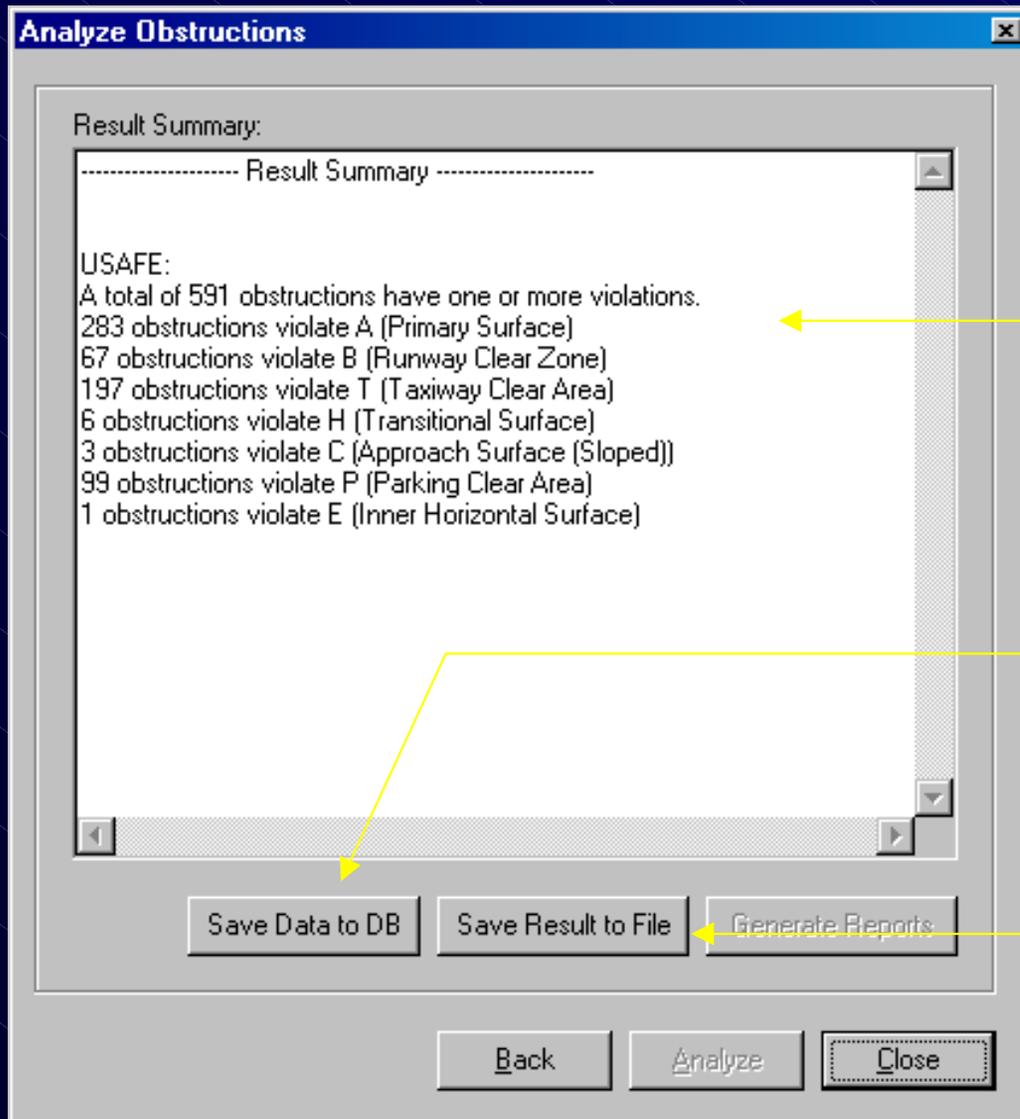
Select either Individual or Batch Analysis

Data Required for New Siting Analysis - Can also Select Location from Screen

Select Criteria for Analysis

Type of Analysis

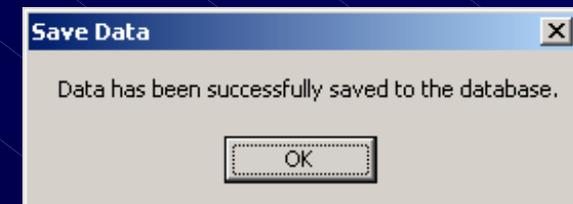
Obstruction Analysis - Results



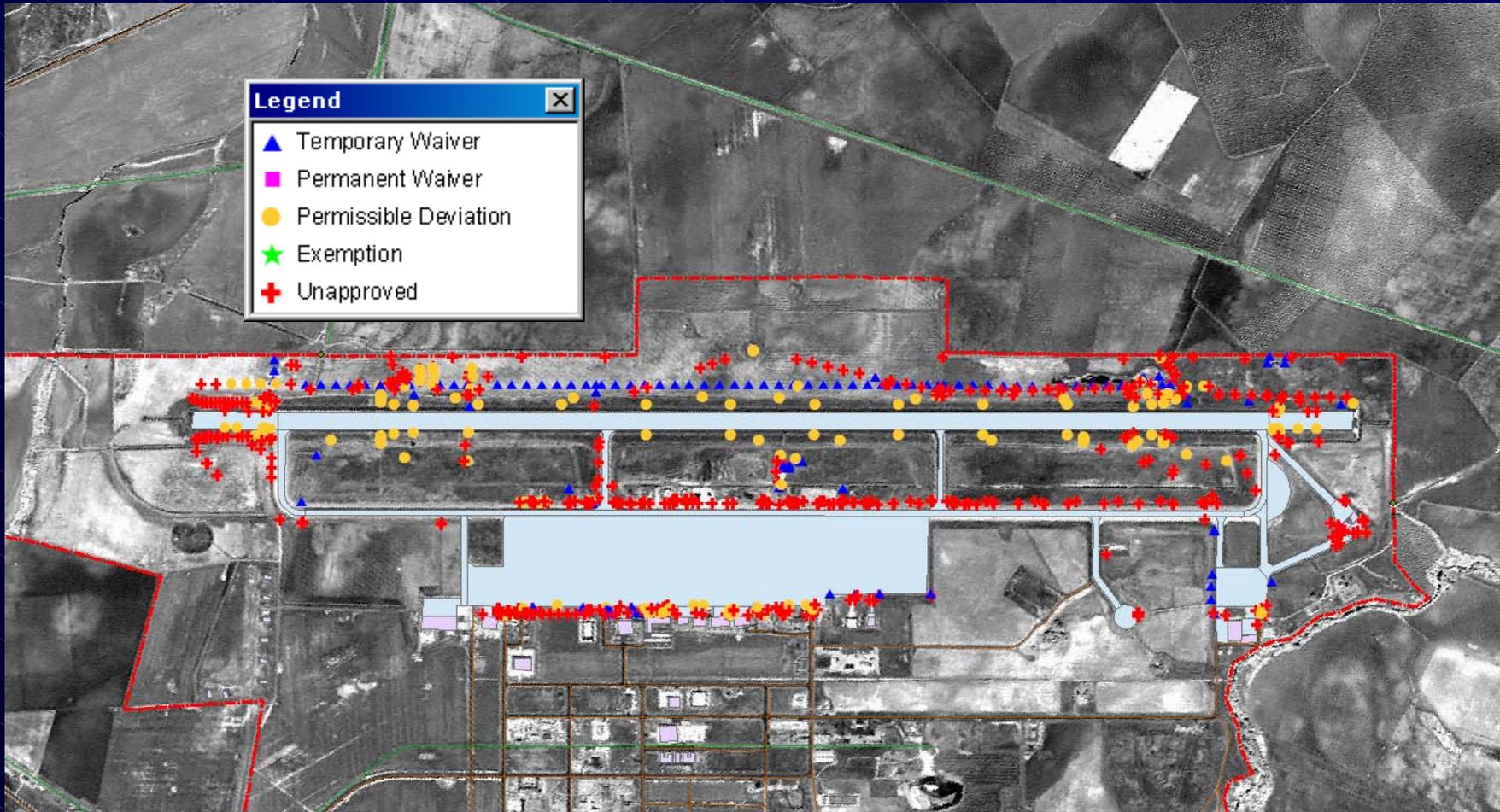
Results from batch analysis

Save analysis results to database

Saves summary to text file



Obstruction Analysis - Results



Siting Analysis

Analyze Obstructions

Select Data Source

Existing Structures in Database

New Siting Analysis

X Coord: Y Coord:

Height: Ground Elevation:

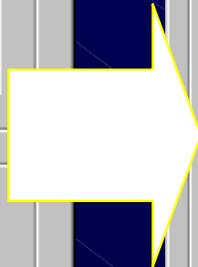
Select Analyses and Criteria

Applicable Criteria: IAIT, ICAO, **USAFE**

Selected for Analyses: **USAFE**

Select Analyses: Priority Risk Areas Airspace Surface Taxiway/Apron Clearance

Back Analyze Close



Analyze Obstructions

Result Summary:

----- Result Summary -----

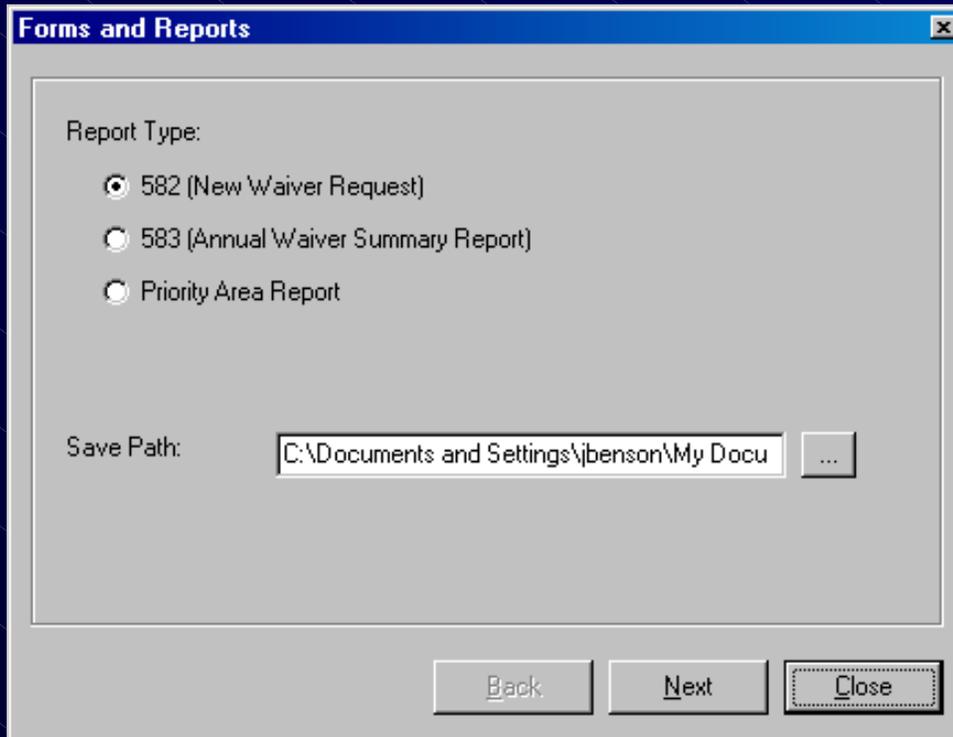
Priority Risk Areas:
A total of 1 objects are within the priority risk areas.
1 objects are within PA1 (Priority Risk Area 1)

USAFE:
X coordinate: 268446.45
Y coordinate: 4119022.08
Height: 12
Ground Elevation: 80
Maximum allowable height: 2.1
Penetration depth: 9.9
A total of 1 obstructions have one or more violations.
1 obstructions violate A (Primary Surface)

Save Data to DB Save Result to File Generate Reports

Back Analyze Close

Forms and Reports



Forms and Reports

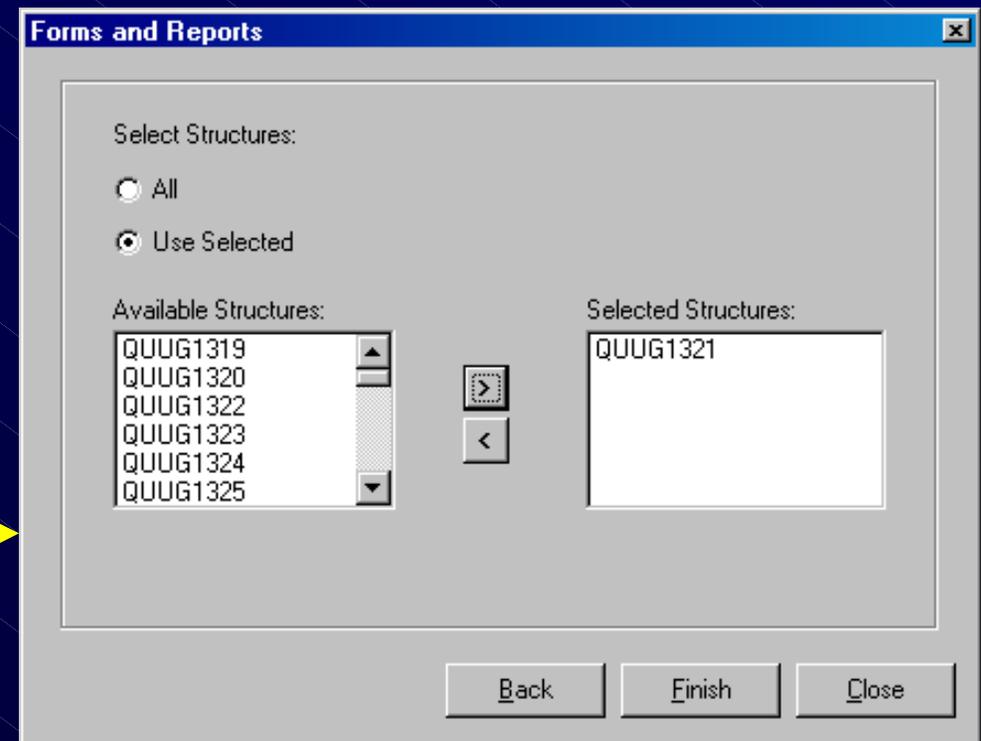
Report Type:

- 582 (New Waiver Request)
- 583 (Annual Waiver Summary Report)
- Priority Area Report

Save Path: ...

Back Next Close

← Select type of report



Forms and Reports

Select Structures:

- All
- Use Selected

Available Structures:

- QUUG1319
- QUUG1320
- QUUG1322
- QUUG1323
- QUUG1324
- QUUG1325

Selected Structures:

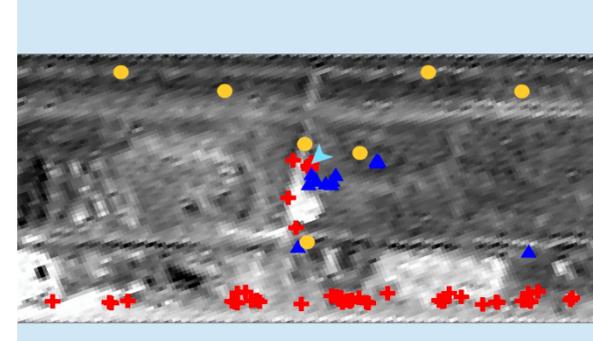
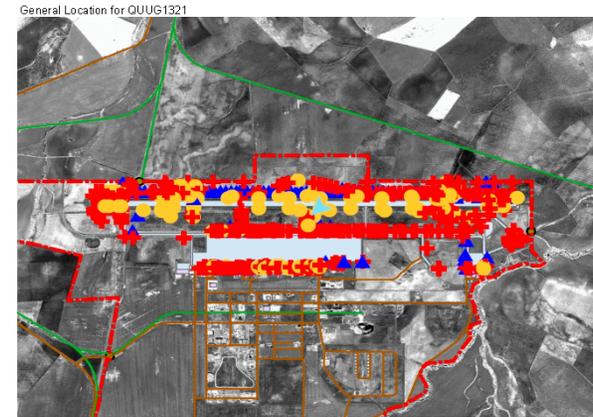
- QUUG1321

Back Finish Close

Select obstruction for report →

Reports - Form 582 Waiver Request

REQUEST FOR WAIVER TO AIRFIELD AND AIRSPACE CRITERIA	
TO BE COMPLETED BY THE BASE CIVIL ENGINEER	
TO: HQ USAF UNIT 3050 BOX 10 APO AE 09094-5010	FROM:
1. ACTION REQUESTED <input type="checkbox"/> TEMPORARY WAIVER <input type="checkbox"/> EXTENDED WAIVER <input type="checkbox"/> PERMANENT WAIVER <input type="checkbox"/> CANCEL	
2. WAIVER NUMBER	3. DESCRIPTION QUUG1321
5. FY AND FUNDING SOURCE	6. PROJECT NO.
8. CRITERIA TO BE WAIVED (State chapter, paragraph, table number, etc.)	
<input checked="" type="checkbox"/> AFMAN 32-1013V2 <small>AFMAN 32-1013V2 (Chapter 3, Table 3-1, Items 2-3, USAFAC Supp. Table 22, Item 1)</small> <input type="checkbox"/> AFMAN 32-1013V1 <input type="checkbox"/> AFI 32-1042 <input type="checkbox"/> AFI 32-1044	
9. DESCRIPTION OF PROPOSED FACILITY (Specify how the prop (length, width, height, diameter, etc.), type of construction (materials, permanency, map numbers. Attach a location plan and site plan. The site plan will show all existing proposed facility, elevations at the runway centerline at points perpendicular to the taxiways and aircraft parking aprons, etc. Attach an elevation sketch if the proposed degree of the violation. Continue on a separate sheet of paper if necessary and refer to	
Point	Description
NA42_3	Concrete block with switch box
11a. PRECAUTIONS FOR SAFETY (Describe the safety precautions that will be taken to minimize the flight safety hazards if the waiver is approved. Precautions may include special painting or lighting of obstructions, briefing programs to flying personnel and/or construction crews on safety procedures for foreign detection and control, etc. Continue on a separate sheet of paper if necessary and reference by item number.)	
ORM Certification: "I have reviewed the requirements for the Airfield/Airspace Waiver Request, and I have determined it to be the minimum acceptable risk."	
11b. WING COMMANDER (Printed Name and Grade)	11c. SIGNATURE
12. ATTACHMENTS <input type="checkbox"/> LOCATION PLAN <input type="checkbox"/> SITE PLAN <input type="checkbox"/> ELEVATION SKETCH <input type="checkbox"/> OTHER (Specify)	
13. COORDINATION AND CONCURRENCE	
PRINTED NAME, GRADE AND TITLE SIGNATURE	
a. BASE CIVIL ENGINEER	
b. AIRFIELD MANAGER	
c. BASE FLIGHT SAFETY OFFICER	
d. CHIEF, ATC OPERATIONS	
II. TO BE COMPLETED BY HQ USAF/CE	
FROM: HQ USAF UNIT 3050 BOX 10 APO AE 09094-5010	TO:
PRINTED NAME, GRADE AND TITLE SIGNATURE	
a. DIR OF SAFETY	
b. DIR OF OPERATIONS	
c. USAF CIVIL ENGINEER	
d. LG & COMM	
15. APPROVAL STATUS <input type="checkbox"/> APPROVED <input type="checkbox"/> CONDITIONAL APPROVAL (See Comments) <input type="checkbox"/> DISAPPROVED	
*NOTE: This information should be the same as reflected on the USAF Form 10. JUSTIFICATION FOR A WAIVER (Explain in detail why the proposed brief description of alternatives considered. Continue on a separate sheet of paper	
16a. WING COMMANDER (For Temporary Waiver) (Printed Name and Grade)	16b. SIGNATURE
17a. HQ USAF/CE	17b. SIGNATURE



Reports - Form 583 Summary Report

APPROVED WAIVERS TO AIRFIELD AND AIRSPACE CRITERIA										PAGE 1 OF 3 PAGES			
1. BAOE QUUG1-Monney AR		2. ASOF 05052003		3. CONTROL SURFACE MULTI		4. ALPHA PREFIX							
NUMBER (a)	DESCRIPTION (b)	GRID COORDINATES (c)	CRITERIA VIOLATED (Reference: criteria; paragraph table (f), from no. 6, Figure (f), etc) (d)	FRAGILE (Yes = Y, No = N) (e)	ELEVATION AT CENTERLINE OR EXTENDED RUNWAY CENTERLINE OR ALSES, ELEVATION AT END OF RUNWAY OR ALSES, OF AIRFIELD ELEVATION (as applicable) (f)	ELEVATION AT CENTERLINE OR EXTENDED RUNWAY CENTERLINE OR ALSES, ELEVATION AT END OF RUNWAY OR ALSES, TAXIWAY OR DISTANCE FROM RUNWAY, ALSE, TAXIWAY OR TRACK CENTERLINE, FROM FAR EDGE OF TAXIWAY, OR FROM EDGE OF APPROXIMATE (as applicable) (g)	DISTANCE FROM END OF RUNWAY OR ALSES (as applicable) (h)	ELEVATION OF CONTROL SURFACE AT MOST SEVERE POINT OF VIOLATION (i)	GROUND ELEVATION AT MOST SEVERE POINT OF VIOLATION (j)	HEIGHT OF OBSTRUCTION (k)	VIOLATION (l)	REMARKS if programmed for removal or modification. Include project number. (m)	DATE APPROVED BY HQ USAFBCEPP (n)
QUUG001	Stick in Switch Box		A - Primary Surface	NO	R:12.46	R:194.55	87.59	86.14	1.48	1.20	REF A9		
QUUG010	Sign Post / Sign "F RD H16 00 EL PASO, 20 MA DERADIC 10"		L-15 A - Primary Surface	YES	R:50.49	R:252.72	81.69	80.47	1.23		REF A9B		
			L-15 B - Runway Clear Zone	YES	R:50.49	R:252.72	81.69	80.47	1.23				
QUUG012	Tree		K-10 A - Primary Surface	NO	R:163.63	R:117.6991	87.22	83.52	3.70	1.10	REF A108		
QUUG013	OLD Junction Box in Wood Post Electrical (Three wooden poles)		A - Primary Surface	YES	R:148.29	R:1704.15	83.64	82.80	0.84		REF A109		
			A - Primary Surface	YES	R:148.29	R:1704.15	83.64	82.80	0.84				
QUUG014	Trees		A - Primary Surface	NO	R:165	R:117.4598	84.58	82.88	1.70	0.44	REF A110		
			A - Primary Surface	NO	R:165	R:117.4598	84.58	82.88	1.70	0.44			
			A - Primary Surface	NO	R:165	R:117.4598	84.58	82.88	1.70	0.44			
			A - Primary Surface	NO	R:165	R:117.4598	84.58	82.88	1.70	0.44			
QUUG015	OSAGE BLDG		K-10 A - Primary Surface	NO	R:174.85	R:177.355	83.65	2.70	2.17		REF A111		
QUUG016	Post / Steel bar		L-3 A - Primary Surface	YES	R:143.22	R:143.88	86.77	85.28	1.50	0.29	REF A118 / B31		
			L-3 A - Primary Surface	YES	R:143.22	R:143.88	86.77	85.28	1.50	0.29			
			L-3 A - Primary Surface	YES	R:143.22	R:143.88	86.77	85.28	1.50	0.29			
			L-3 B - Runway Clear Zone	YES	R:143.22	R:143.88	86.77	85.28	1.50	0.29			
			L-3 B - Runway Clear Zone	YES	R:143.22	R:143.88	86.77	85.28	1.50	0.29			
QUUG017	WASAMGELS (WASA building)		L-5 A - Primary Surface	NO	R:145.8	R:470.1	86.10	83.70	2.40	0.88	REF A121		
			L-5 A - Primary Surface	NO	R:145.8	R:470.1	86.10	83.70	2.40	0.88			
			L-5 A - Primary Surface	NO	R:145.8	R:470.1	86.10	83.70	2.40	0.88			
			L-5 A - Primary Surface	NO	R:145.8	R:470.1	86.10	83.70	2.40	0.88			
			L-5 A - Primary Surface	NO	R:145.8	R:470.1	86.10	83.70	2.40	0.88			
QUUG025	Tree line + Small pond between RWY 20 and perimeter road		L-15 A - Primary Surface	NO	R:209.22	R:209.4	1007.973	80.73	9999.000	9999.20	REF A204		
			L-15 A - Primary Surface	NO	R:209.22	R:209.4	1007.973	80.73	9999.000	9999.20			
			L-15 B - Runway Clear Zone	NO	R:209.22	R:209.4	1007.973	80.73	9999.000	9999.20			
			L-15 H - Transitional Surface	NO	R:209.22	R:209.4	1007.973	80.73	9999.000	9999.20			
			L-15 H - Transitional Surface	NO	R:209.22	R:209.4	1007.973	80.73	9999.000	9999.20			
QUUG034	Vent for fuel tanks		H - Transitional Surface	YES	R:241.97	R:179206	86.45	83.35	3.10	0.35	REF H4		
			H - Transitional Surface	YES	R:241.97	R:179206	86.45	83.35	3.10	0.35			
			H - Transitional Surface	YES	R:241.97	R:179206	86.45	83.35	3.10	0.35			
QUUG037	Air Relief Valve / Hydrant		T - Taxiway Clear Area	NO	T:27.83	T0	85.04	84.90	0.14		REF T14		
QUUG038	SAF Electrical Manhole		T - Taxiway Clear Area	NO	T:27.83	T0	85.04	84.90	0.14				
			T - Taxiway Clear Area	NO	T:27.83	T0	85.04	84.90	0.14				
QUUG043	Air Relief Valve		T - Taxiway Clear Area	NO	T:20.42	T0	81.78	81.51	0.26		REF T181		
QUUG044	Air Relief Valve		T - Taxiway Clear Area	NO	T:1998	T0	83.02	81.79	1.24		REF T184		
			T - Taxiway Clear Area	NO	T:1998	T0	83.02	81.79	1.24				
			T - Taxiway Clear Area	NO	T:1998	T0	83.02	81.79	1.24				
QUUG050	Flushmounted Fire Hydrant		P - Parking Clear Area	YES	T:1998	T0	86.12	85.05	0.06		REF P22		
QUUG053	Flushmounted Fire Hydrant Sign (White stick)		P - Parking Clear Area	YES	T:1998	T0	86.00	85.59	0.41		REF P30		
			P - Parking Clear Area	YES	T:1998	T0	86.00	85.59	0.41				
QUUG056	Flushmounted Fire Hydrant Sign (White stick)		P - Parking Clear Area	YES	T:1998	T0	85.44	85.01	0.43		REF P34		
QUUG065	Tree		P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50		REF P51; 'C H2M NOT PD PER AFM 32-1123, ATTACH 14		
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
			P - Parking Clear Area	NO	T:1998	T0	93.00	85.50	7.50				
QUUG066	Tree		P - Parking Clear Area	NO	T:1998	T0	106.67	85.28	21.39		REF P52; 'C H2M NOT PD PER AFM 32-1123, ATTACH 14		
			P - Parking Clear Area	NO	T:1998	T0	106.67	85.28	21.39				
			P - Parking Clear Area	NO	T:1998	T0	88.10	85.40	3.70				
QUUG1001	Telefonica handhole / Manhole SAF Com.		L-3 A - Primary Surface	NO	R:127.18	R:166.21	85.57	85.36	0.21		REF A180 / B30		
QUUG1002	Telefonica handhole / Manhole SAF Com.		L-3 A - Primary Surface	NO	R:126.96	R:204.45	85.78	85.51	0.27		REF A181		

USAFE Form 583 AUG 88

Export Obstruction Data

Export Obstruction Data

File Location:

Enter Location and File Name for Export File

Data Saved

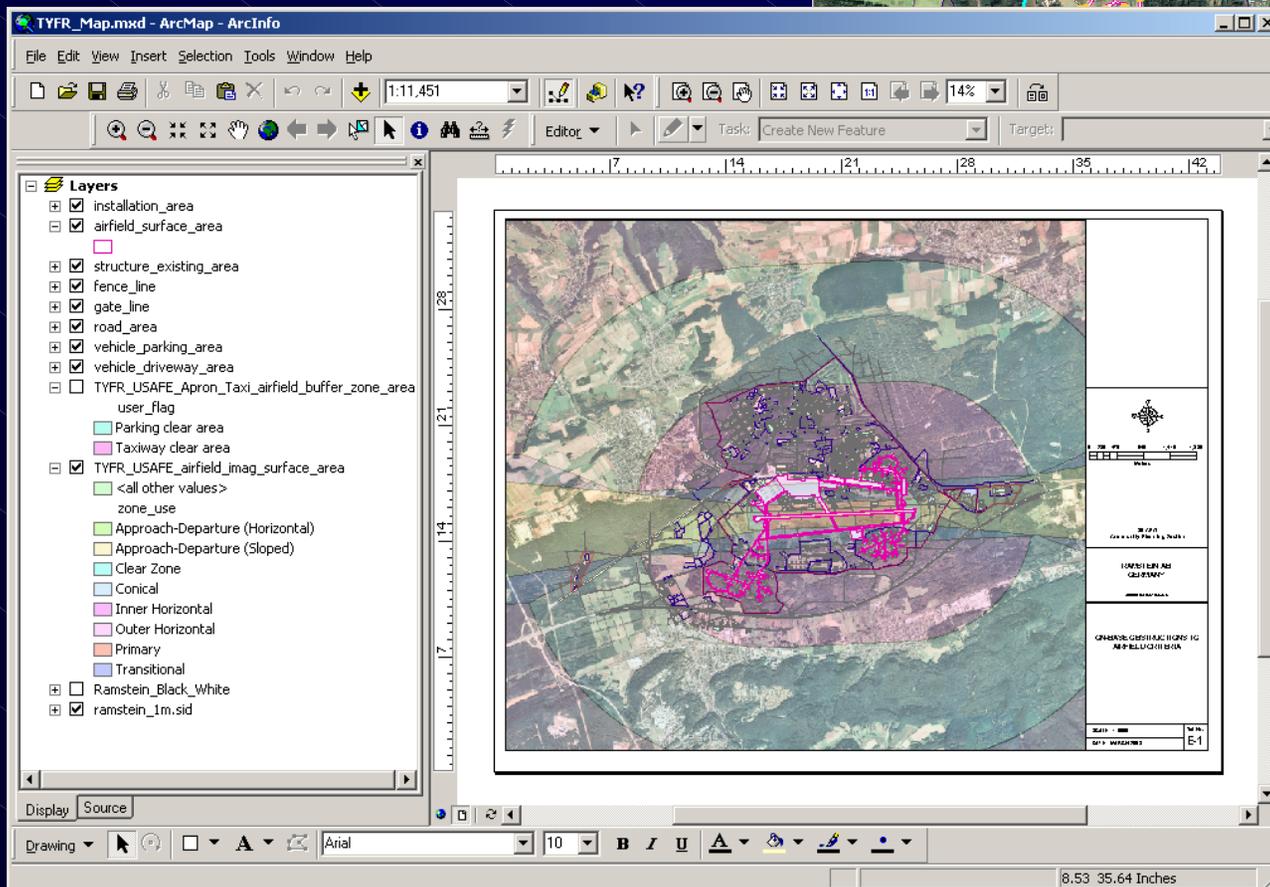
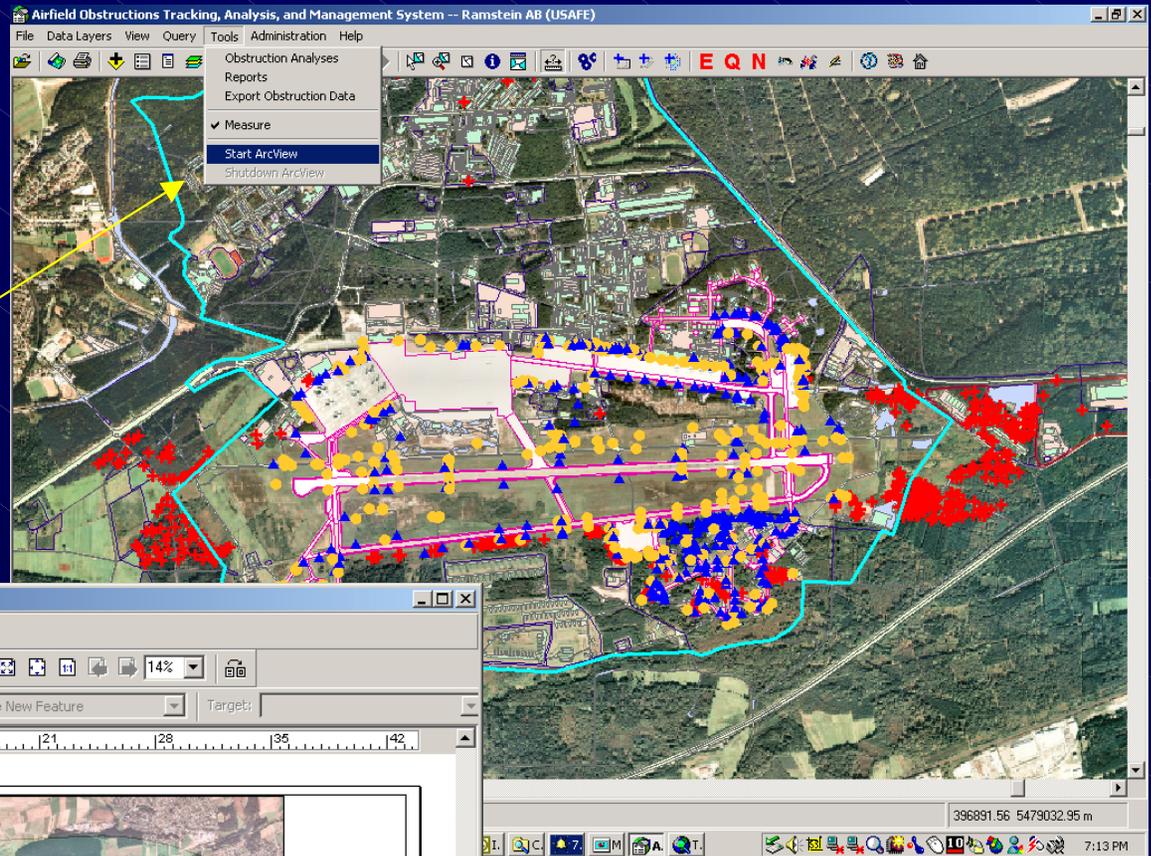
Obstruction data have been successfully saved to the specified file(s).

Obstruction #	X Coordinate	Y Coordinate	Ground Elevation	Obstruction Classification
QUUG001	267264.8	4115895	86.1416	Temporary waiver
QUUG004	268185.4	4118831	81.4557	Permissible Deviation
QUUG004	268193.8	4118827	81.4722	Permissible Deviation
QUUG004	268202.2	4118824	81.5179	Permissible Deviation
QUUG004	268210.6	4118821	81.5737	Permissible Deviation
QUUG005	268323.4	4118777	81.3971	Permissible Deviation
QUUG005	268331.8	4118773	81.4005	Permissible Deviation
QUUG005	268340.1	4118770	81.4075	Permissible Deviation
QUUG005	268348.5	4118767	81.4062	Permissible Deviation
QUUG006	267120.1	4116200	85.2536	Permissible Deviation
QUUG006	267093	4116131	84.6965	Permissible Deviation
QUUG007	267884.7	4118064	81.8559	Permissible Deviation
QUUG008	268181.8	4118920	82.7236	Permissible Deviation
QUUG009	268147.1	4118876	80.4651	Unapproved
QUUG010	268237.8	4118899	81.5099	Temporary waiver
QUUG010	268313.2	4119108	80.894	Temporary waiver
QUUG010	268442.9	4119414	80.4709	Temporary waiver
QUUG011	268488.8	4118955	80.9713	Permissible Deviation
QUUG012	267914.8	4117453	83.5225	Temporary waiver
QUUG013	267925.1	4117519	82.802	Temporary waiver
QUUG013	267926.1	4117520	82.775	Temporary waiver
QUUG013	267926.9	4117518	82.7721	Temporary waiver
QUUG014	267929.1	4117470	83.0251	Temporary waiver
QUUG014	267923.5	4117455	83.3187	Temporary waiver
QUUG014	267924.9	4117475	82.8802	Temporary waiver
QUUG014	267929.7	4117462	83.2195	Temporary waiver
QUUG014	267932.6	4117468	83.0477	Temporary waiver
QUUG015	267924.3	4117447	83.646	Temporary waiver
QUUG016	266955.4	4115847	85.2782	Temporary waiver
QUUG016	266923	4115862	84.9876	Temporary waiver
QUUG016	266887.8	4115878	84.9639	Temporary waiver
QUUG017	268097.8	4118774	80.8426	Temporary waiver
QUUG017	268110.3	4118838	80.6997	Temporary waiver
QUUG017	268097.2	4118783	80.7651	Temporary waiver
QUUG017	267133.1	4116349	84.768	Temporary waiver
QUUG017	267119.9	4116274	83.701	Temporary waiver

Sample text file for import to AutoCAD or elsewhere

E-Tab Creation

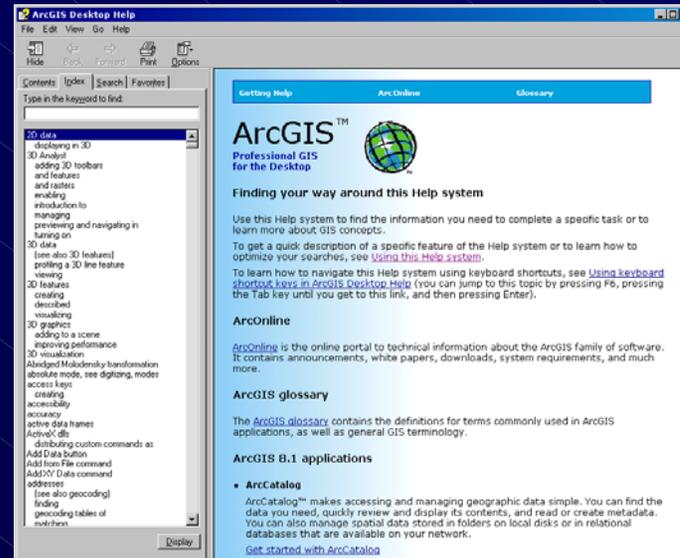
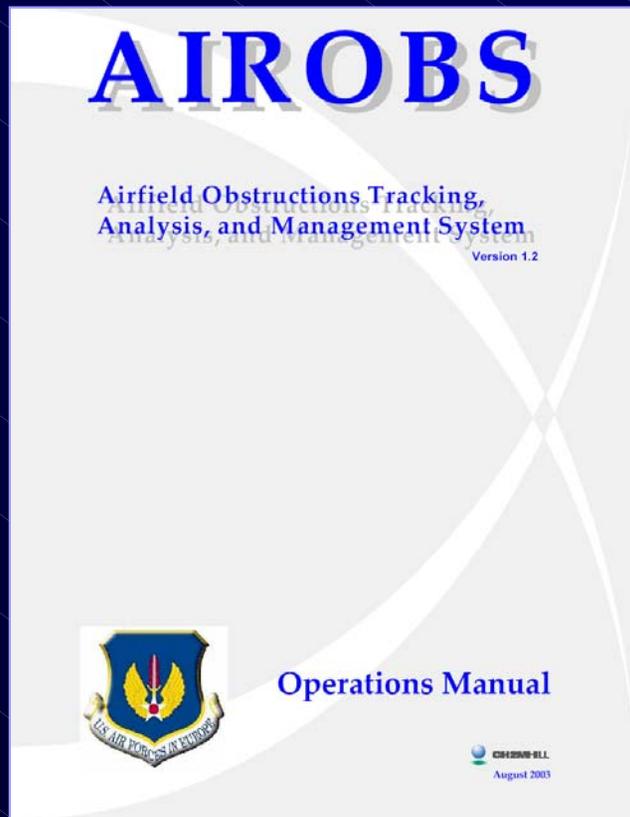
Tool to launch ArcView



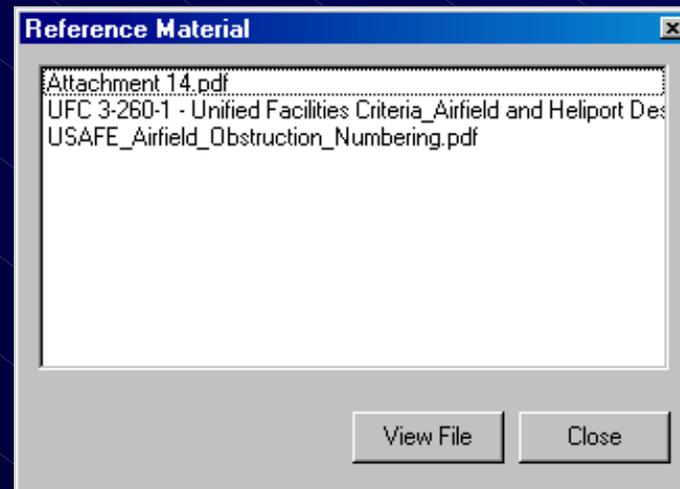
E-Tab layout

Help & References

AIROBS User Manual



ArcGIS
Desktop
Help



Reference
Material

Where is AIROBS deployed?

- Headquarters
USAFE
- Ramstein AB
- Spangdahlem AB
- Aviano AB
- RAF Lakenheath
- RAF Mildenhall
- RAF Fairford
- Morón AB
- Tuzla AB*
- MCAS Yuma
- US Air Force
Academy

(as of July 2004)

Future Development Strategy

- Modifications to work with ArcGIS Rev. 9
- Web-based (ArcIMS) version
- Optional Oracle / SDE database
- Integration with other GeoBase enterprise applications
- Enhanced functions and features that respond to user requests
- Version and distribution management
- Formal user support center

AIROBSTM

Airfield Obstructions Tracking,
Analysis, and Management System

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