



International Civil Aviation Organization

# Taller Sobre Estudios Aeronáuticos

## Ejercicio N° 1

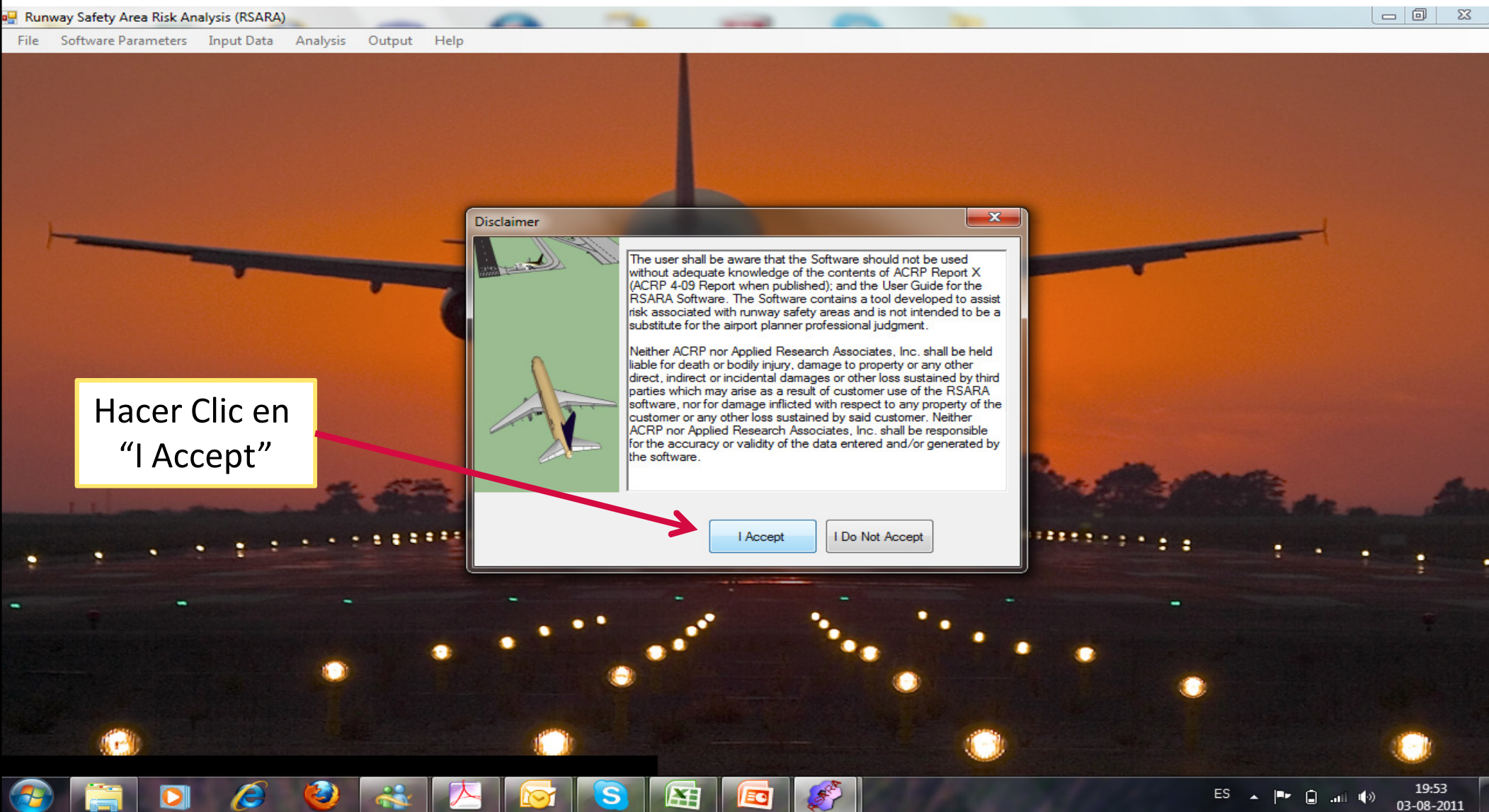
**Patricio Arévalo S.**

Administrador de Aeropuertos  
Inspector de Aeródromos  
DGAC-CHILE

***Lima, 01 al 04 Agosto de 2011***

# Ingreso de Datos en el Software SRAPA

**1° Paso: Abrir software y se encontrará con la siguiente pantalla**



# Creación de Nuevo Proyecto – Primer Paso

Runway Safety Area Risk Analysis (RSARA)

File Software Parameters Input Data Analysis Output Help

New Project

Open Existing Project

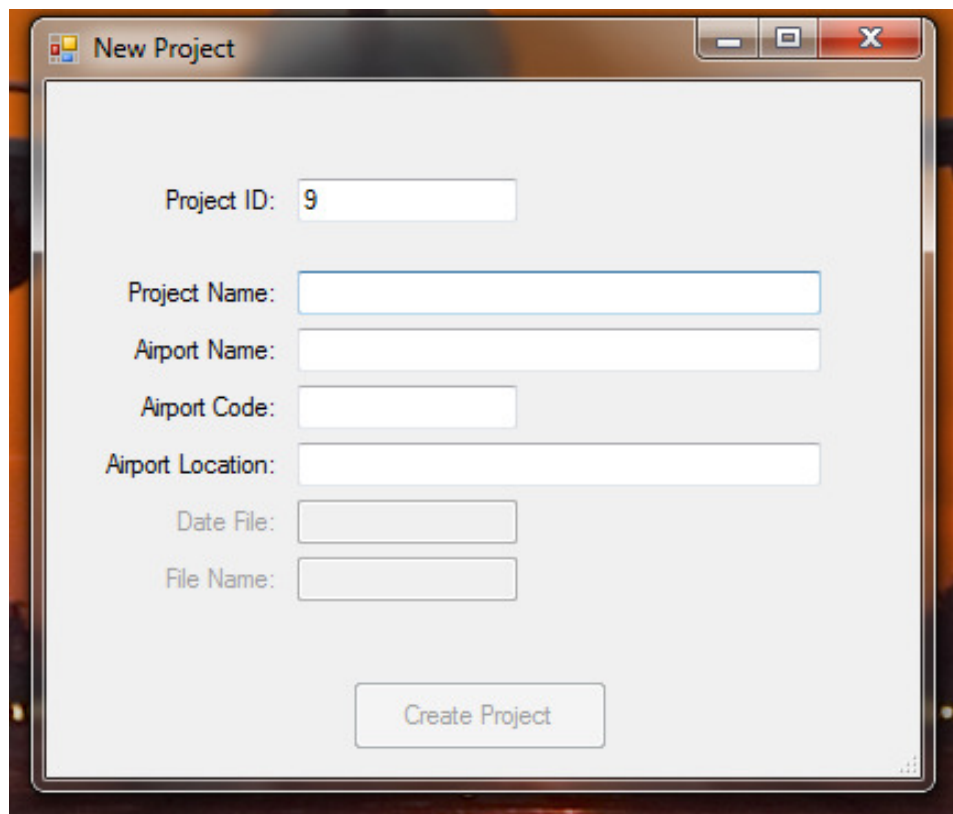
Save As

Delete Project

Exit

Hacer click en el menú File y luego en New Project.

# Creación de Nuevo Proyecto – Paso Dos



New Project

Project ID: 9

Project Name:

Airport Name:

Airport Code:

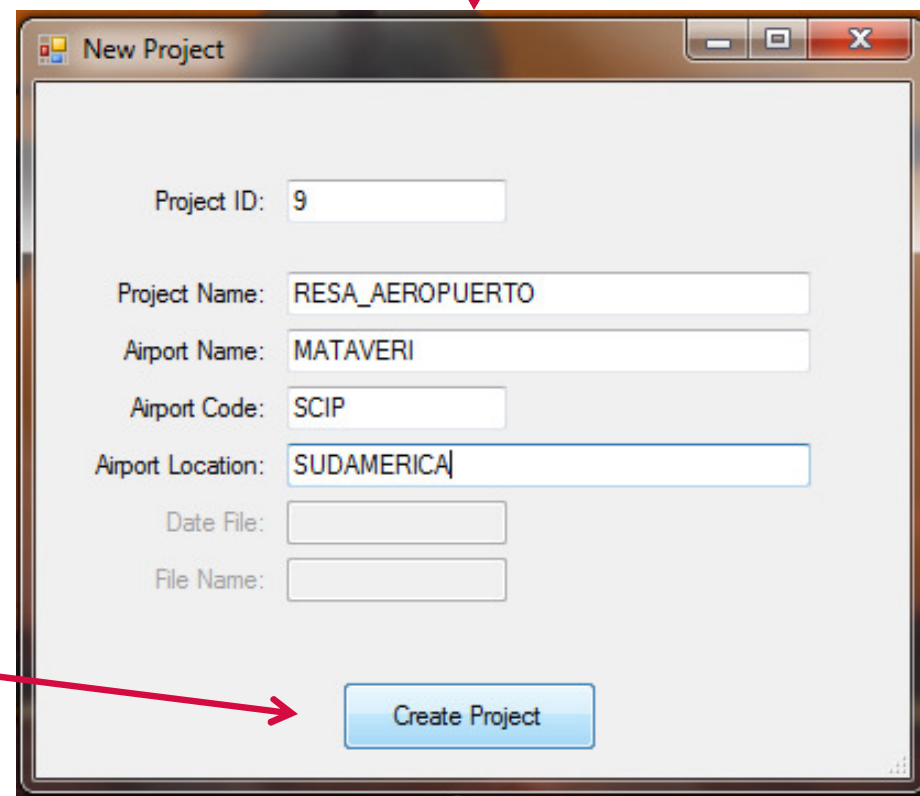
Airport Location:

Date File:

File Name:

Create Project

**INGRESAR DATOS,  
DEL PROYECTO**



New Project

Project ID: 9

Project Name: RESA\_AEROPUERTO

Airport Name: MATAVERI

Airport Code: SCIP

Airport Location: SUDAMERICA

Date File:

File Name:

Create Project

**HACER CLICK EN  
CREATE PROJECT**

# Ejercicio N°1 – Antecedentes Aeropuerto

Variable	Dato
Elevación	227 pies
Volumen Anual de Operaciones	3.000 operaciones año
Expectativas de Crecimiento del Tráfico Aéreo	3%
Nivel deseado de seguridad	0,000001 o 1,0E-006



# Ingresar los antecedentes anteriores

ERI  
is

**Airport Characteristics Input**

**Analyst:**

**Project ID:**

**Airport Characteristics**

Elevation (ft):

Annual Volume:

Expected Traffic Growth (%):

**Risk Criteria**

Target Level of Safety:  (E.g. 1.0E-6)

Airport Commuter Ops by Type of Aircraft? ☐

Airport Hub (Yes or No): ☐

**Runway Configuration**

RWY_ID	ASDA	LDA	Approach Category

# Ingresar los antecedentes anteriores

ERI  
is

**Airport Characteristics Input**

**Analyst:** PATRICIO AREVALO SALGADO

**Project ID:** 9

**Airport Characteristics**

Elevation (ft): 227

Annual Volume: 3.000

Expected Traffic Growth (%): 3

**Risk Criteria**

Target Level of Safety: 1.0E-006 (E.g. 1.0E-6)

Airport Commuter Ops by Type of Aircraft? ☐

Airport Hub (Yes or No): ☐

**Runway Configuration**

RWY_ID	ASDA	LDA	Approach Category

# Ejercicio N°1 – Antecedentes Aeropuerto

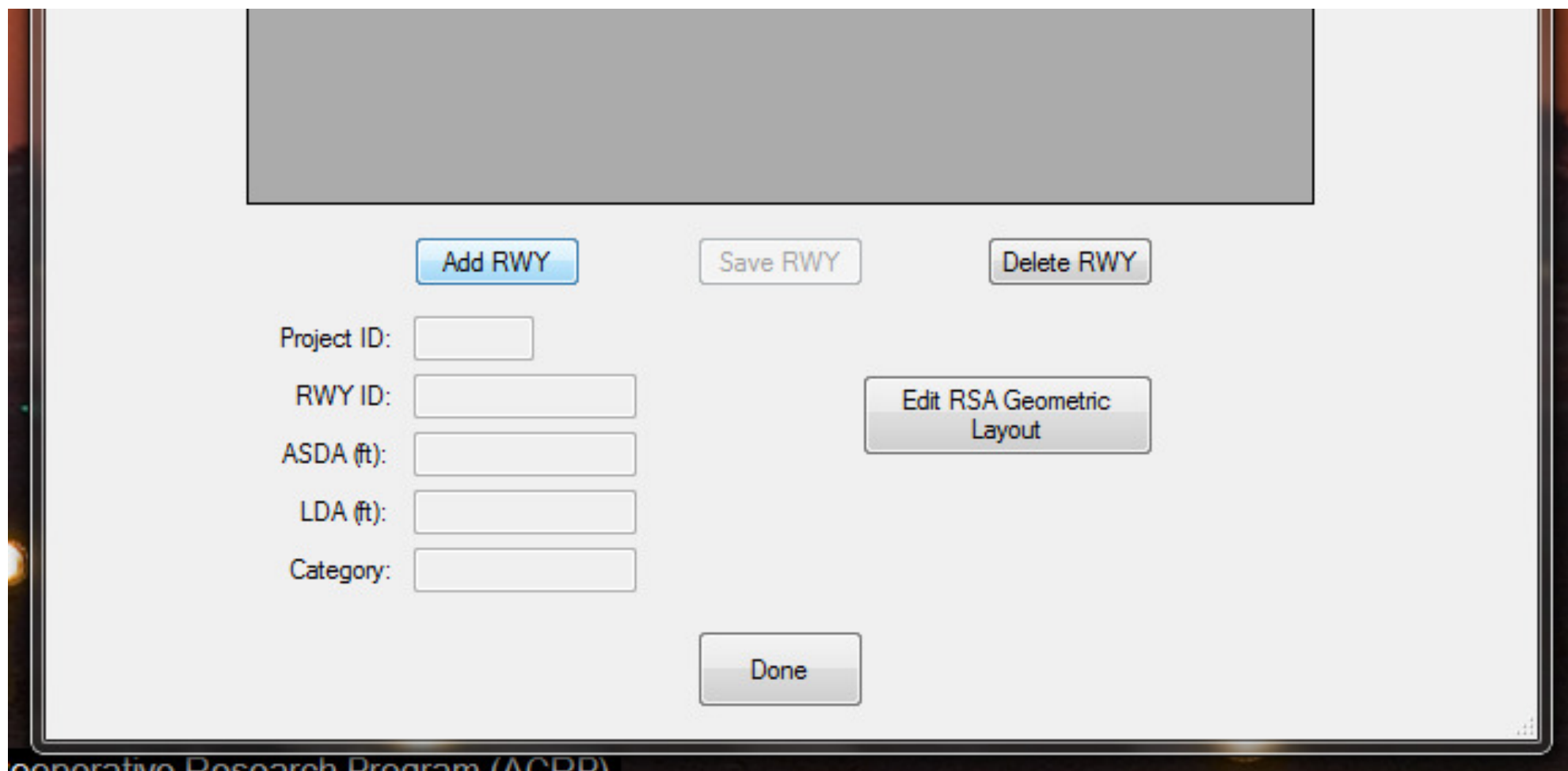
Variable	Dato
Orientación Magnética	10 -28
Tipo de Aproximación	Instrumental CAT I
Clave de Referencia	4 D

## Distancias Declaradas

RWY	TODA	TORA	LDA	ASDA
10	10.826,77 ft	10.826,77 ft	10.826,77 ft	10.826,77 ft
28	10.826,77 ft	10.826,77 ft	10.826,77 ft	10.826,77 ft



# Ingreso datos de la pista

A screenshot of a software interface for entering runway data. The interface is displayed within a window with a dark border. At the top, there is a large grey rectangular area. Below this, there are three buttons: "Add RWY" (highlighted in blue), "Save RWY", and "Delete RWY". To the left of these buttons are five input fields with labels: "Project ID:", "RWY ID:", "ASDA (ft):", "LDA (ft):", and "Category:". To the right of these fields is a button labeled "Edit RSA Geometric Layout". At the bottom center of the form is a button labeled "Done".

**1° HACER CLICK EN “ADD RWY” Y 2° INGRESAR LOS DATOS Y LUEGO HACER CLICK EN “SAVE RWY”, ESTO PARA AMBAS PISTAS.**

# Quedando de esta forma

ERI

is

**Airport Characteristics Input**

**Analyst:** PATRICIO AREVALO SALGADO **Project ID:** 9

**Airport Characteristics**

Elevation (ft): 227

Annual Volume: 3.000

Expected Traffic Growth (%): 3

**Risk Criteria**

Target Level of Safety: 1.0E-006 (E.g. 1.0E-6)

Airport Commuter Ops by Type of Aircraft? ☐

Airport Hub (Yes or No): ☐

**Runway Configuration**

	RWY_ID ▲	ASDA	LDA	Approach Category
▶	10	10.827	10.827	I
	28	10.827	10.827	VISUAL

Add RWY Save RWY Delete RWY

Project ID: 9

RWY ID: 10

ASDA (ft): 10.827

LDA (ft): 10.827

Category: I

Edit RSA Geometric Layout

Done

# Situación Actual





# Situación Actual





# Situación Actual THR 10



Image © 2011 DigitalGlobe

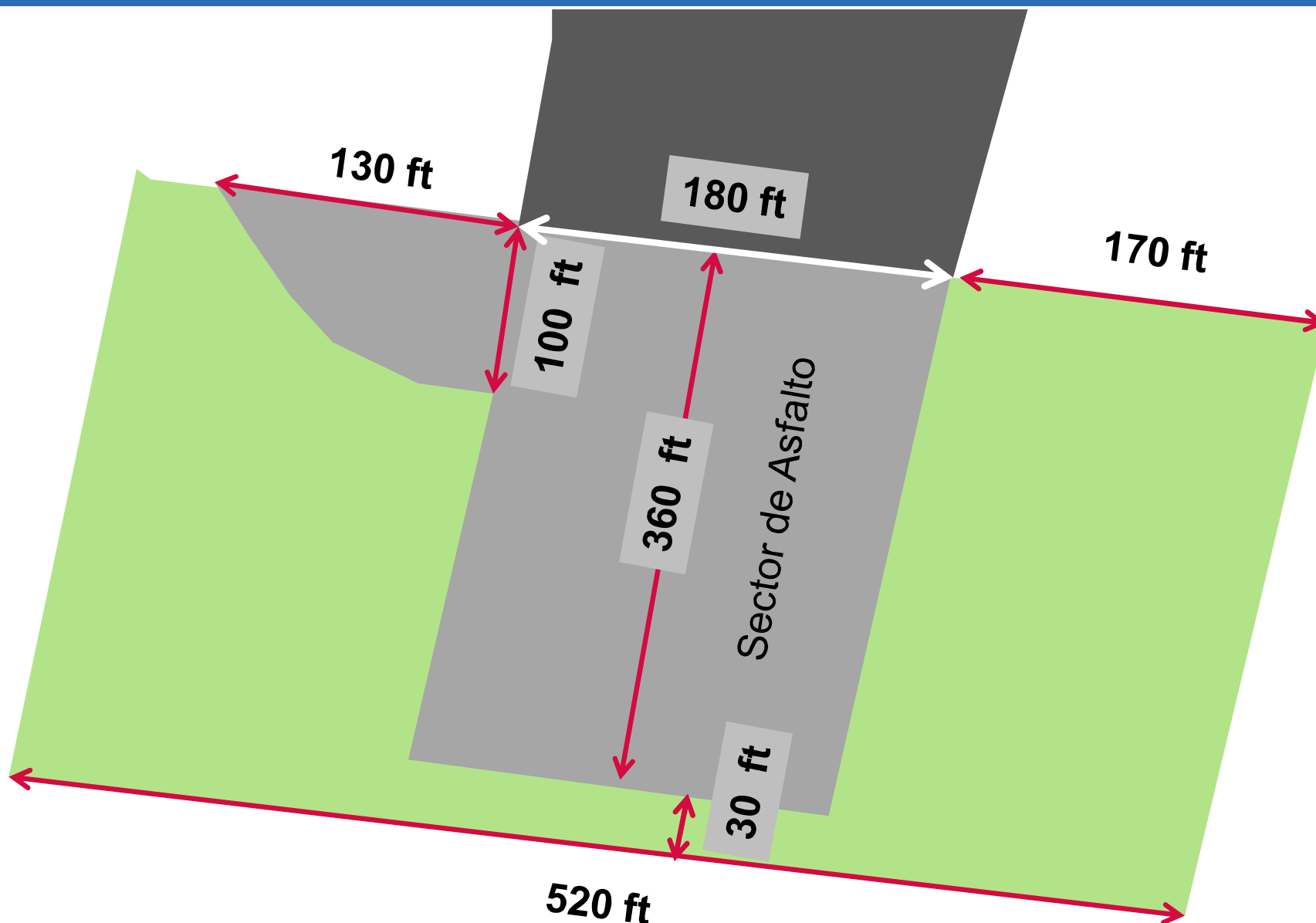
©2010 Google™

Fechas de imágenes: 9/25/2007 2002

Patricio Arévalo Salgado - DGAC-Chile

Alt: ojo 614 m

# Dimensiones Situación Actual THR 10





# Situación Actual THR 10

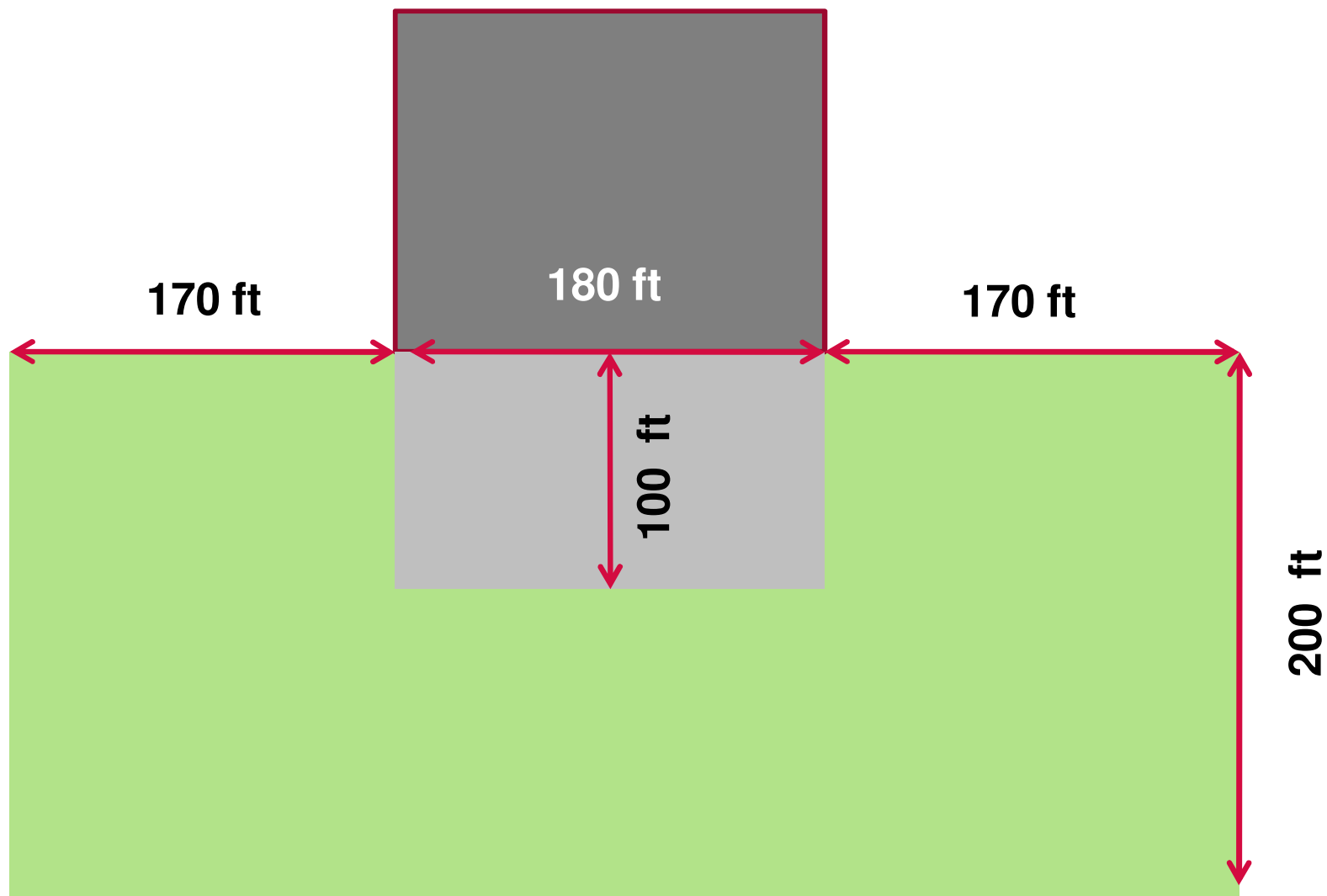




# Situación Actual THR 28



# Dimensiones Situación Actual THR 28

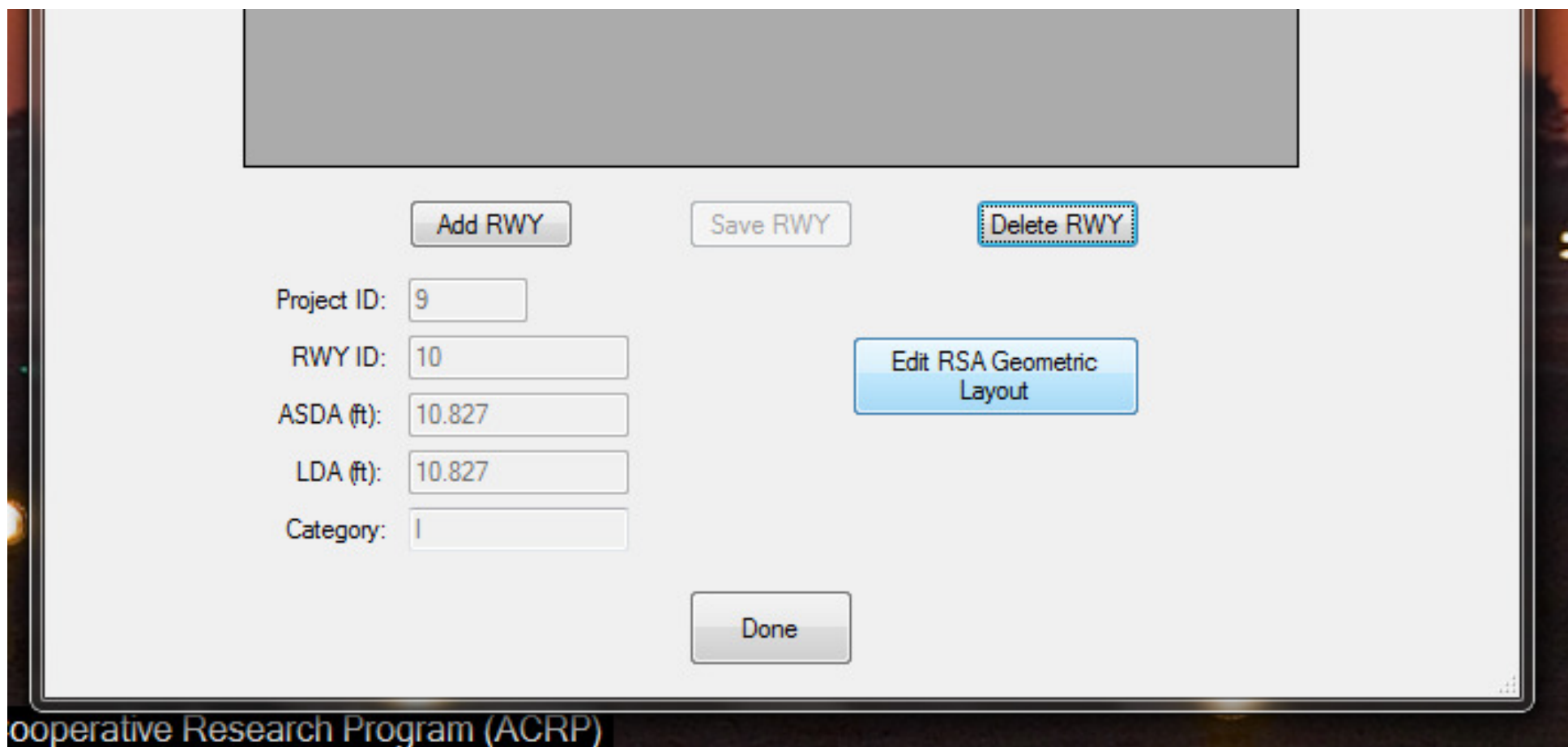


# Situación Actual THR 28





# Luego Ingresar los datos de las RSA

A screenshot of a software interface for entering RSA data. The form includes several input fields and buttons. At the top, there are three buttons: "Add RWY", "Save RWY", and "Delete RWY". Below these, there are five input fields: "Project ID" with the value "9", "RWY ID" with the value "10", "ASDA (ft)" with the value "10.827", "LDA (ft)" with the value "10.827", and "Category" with the value "I". To the right of these fields is a button labeled "Edit RSA Geometric Layout". At the bottom center is a "Done" button. The text "operative Research Program (ACRP)" is visible at the bottom left of the form area.

Project ID: 9

RWY ID: 10

ASDA (ft): 10.827

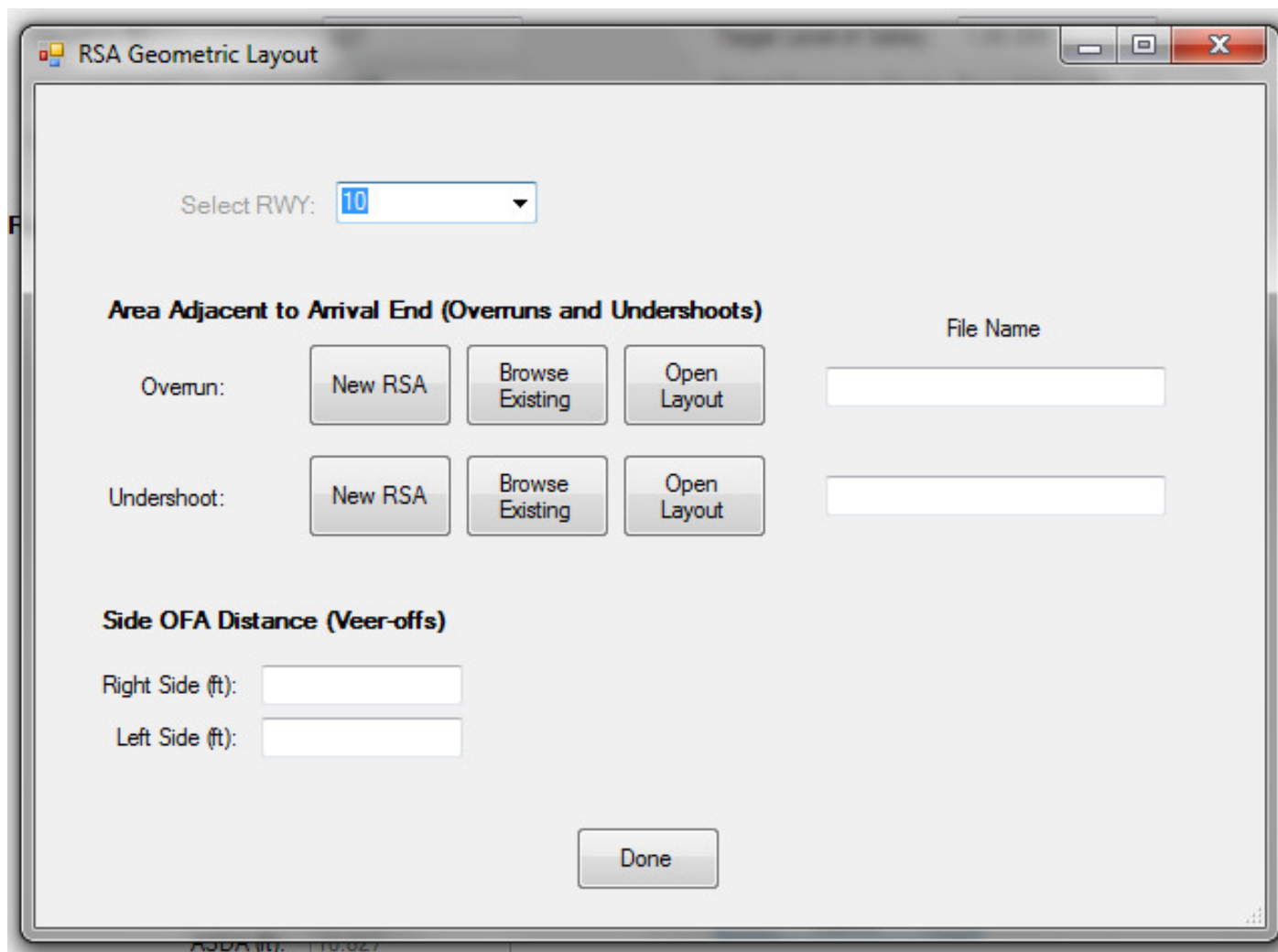
LDA (ft): 10.827

Category: I

Done

operative Research Program (ACRP)

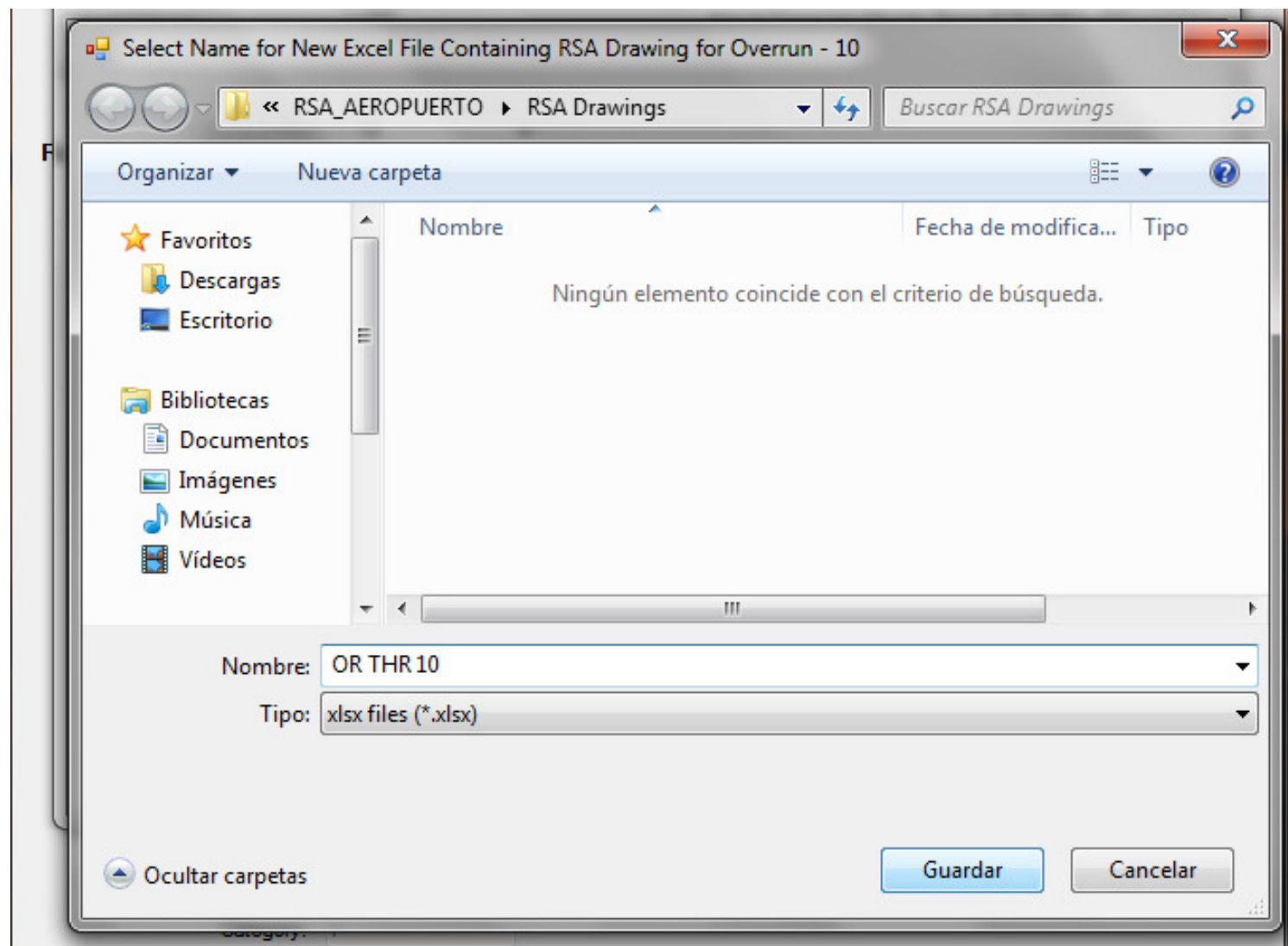
**Para Ingrear las RSA hacer click en “Edit RSA Geometric Layout”**

The image shows a software window titled "RSA Geometric Layout". It contains several input fields and buttons. At the top, there is a "Select RWY:" dropdown menu with "10" selected. Below this, there is a section titled "Area Adjacent to Arrival End (Overruns and Undershoots)". This section has two rows: "Overrun:" and "Undershoot:". Each row has three buttons: "New RSA", "Browse Existing", and "Open Layout". To the right of these buttons are two empty text boxes labeled "File Name". Below the "Area Adjacent to Arrival End" section is a section titled "Side OFA Distance (Veer-offs)". This section has two input fields: "Right Side (ft):" and "Left Side (ft):". At the bottom center of the window is a "Done" button. The window has a standard Windows-style title bar with minimize, maximize, and close buttons.

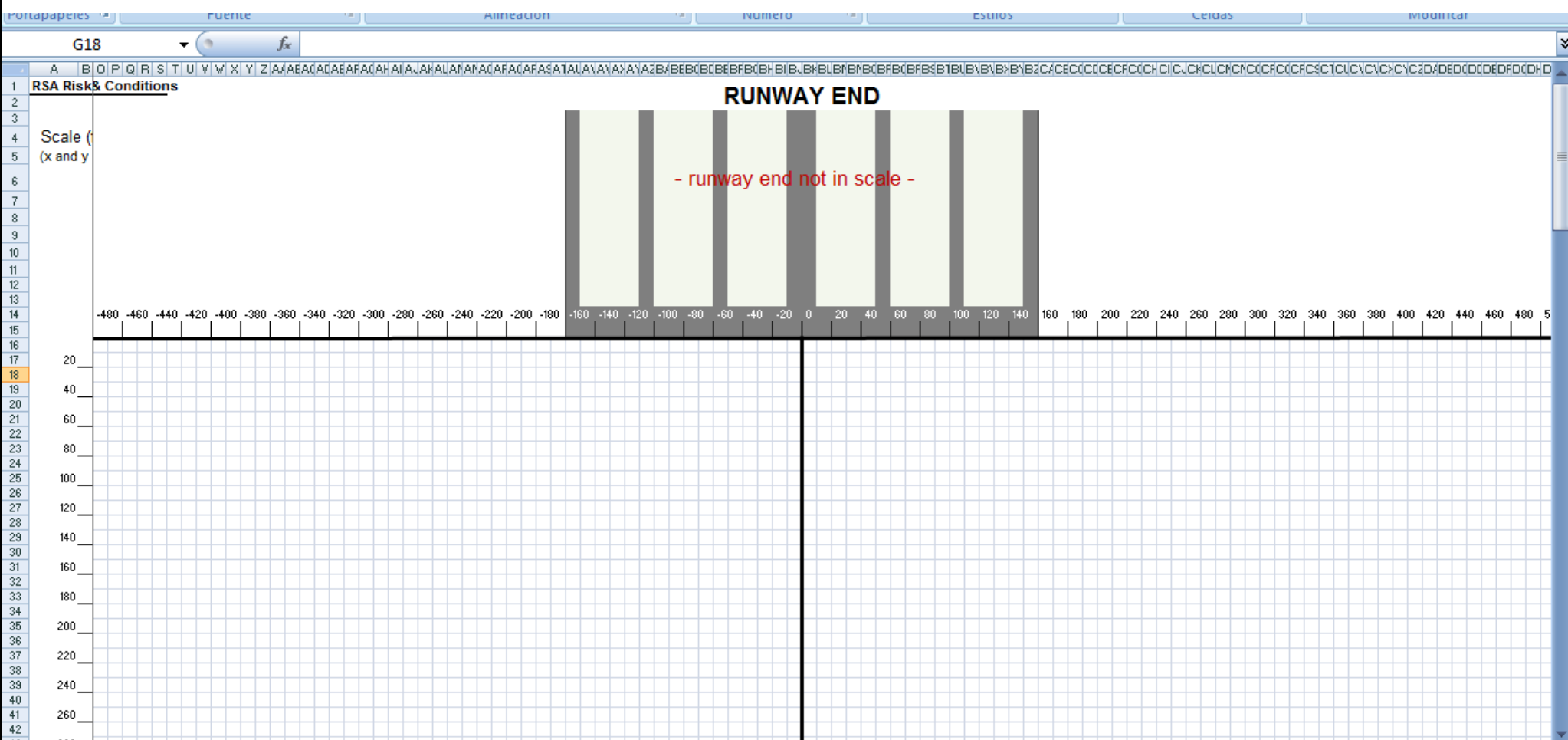
**Hacer click en el botón “New RSA” en Overrun**



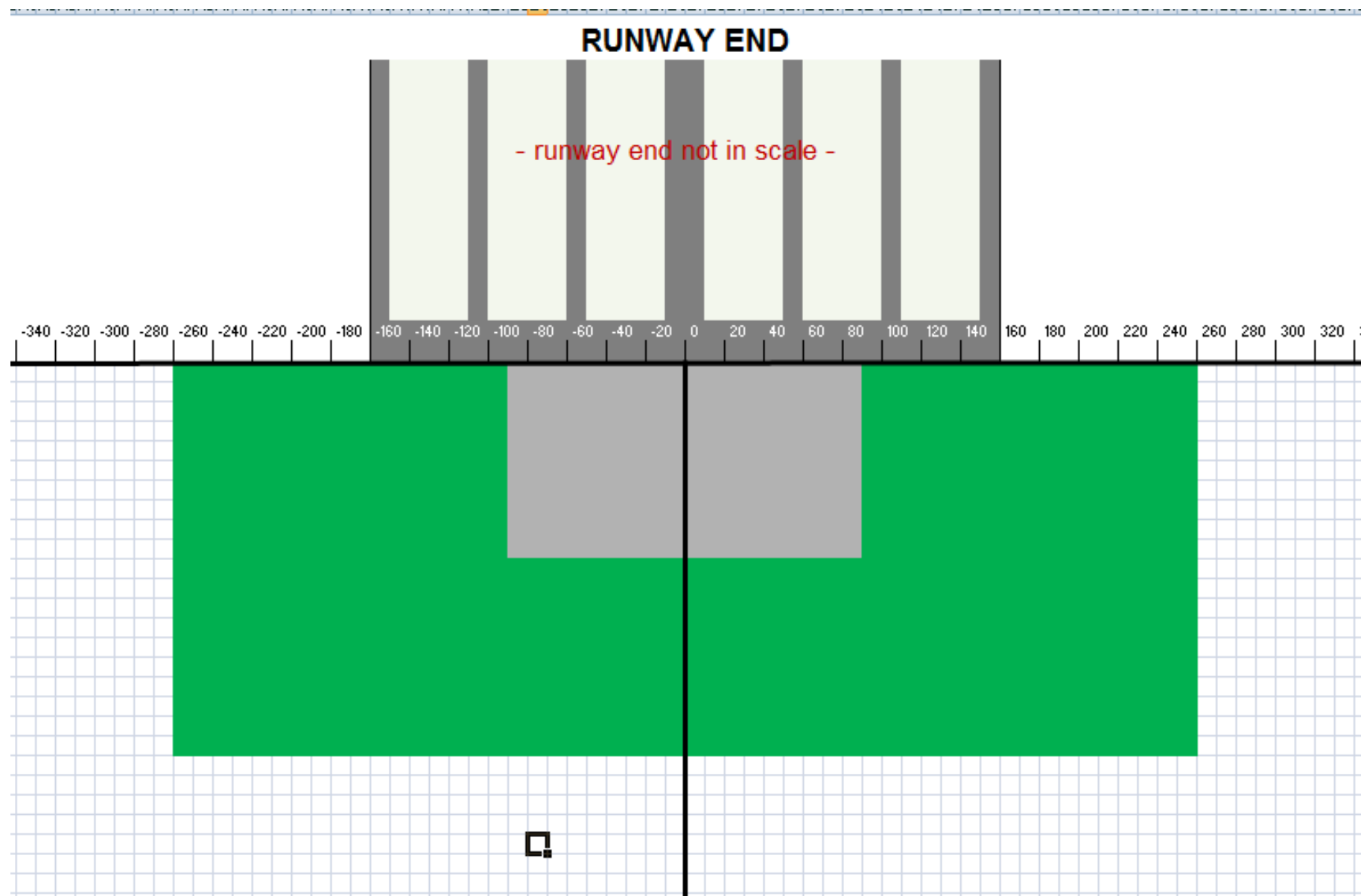
# Ingresar Nombre de Archivo y Guardar



# Luego Ingresar la Geografía de la RSA

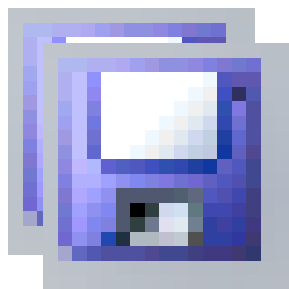


# Quedando de esta forma



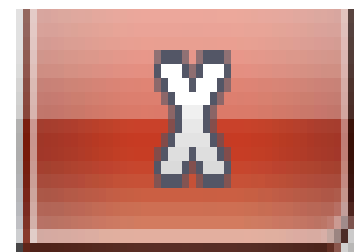
# Luego ...

**GUARDAR**

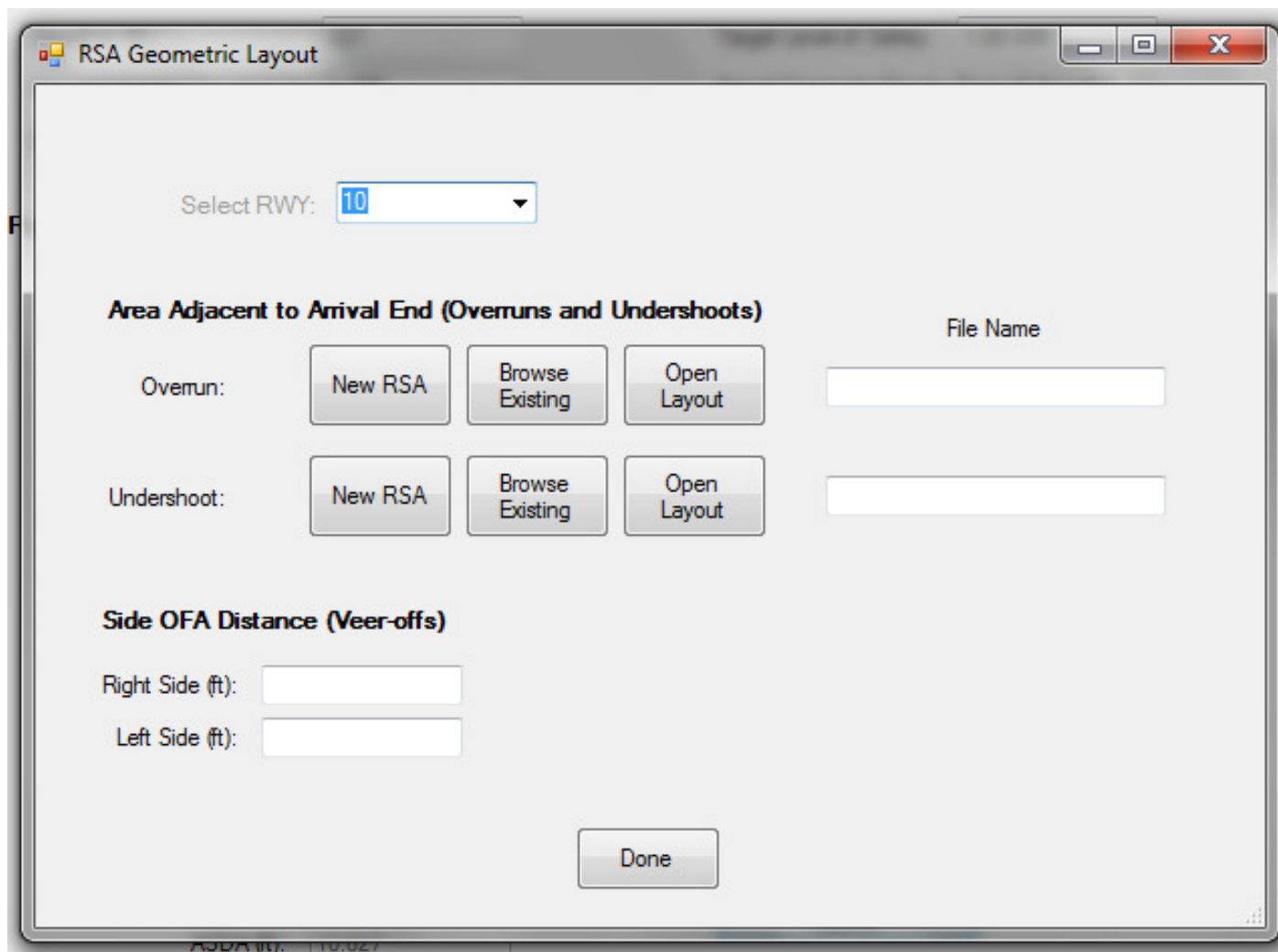


**Y**

**CERRAR**

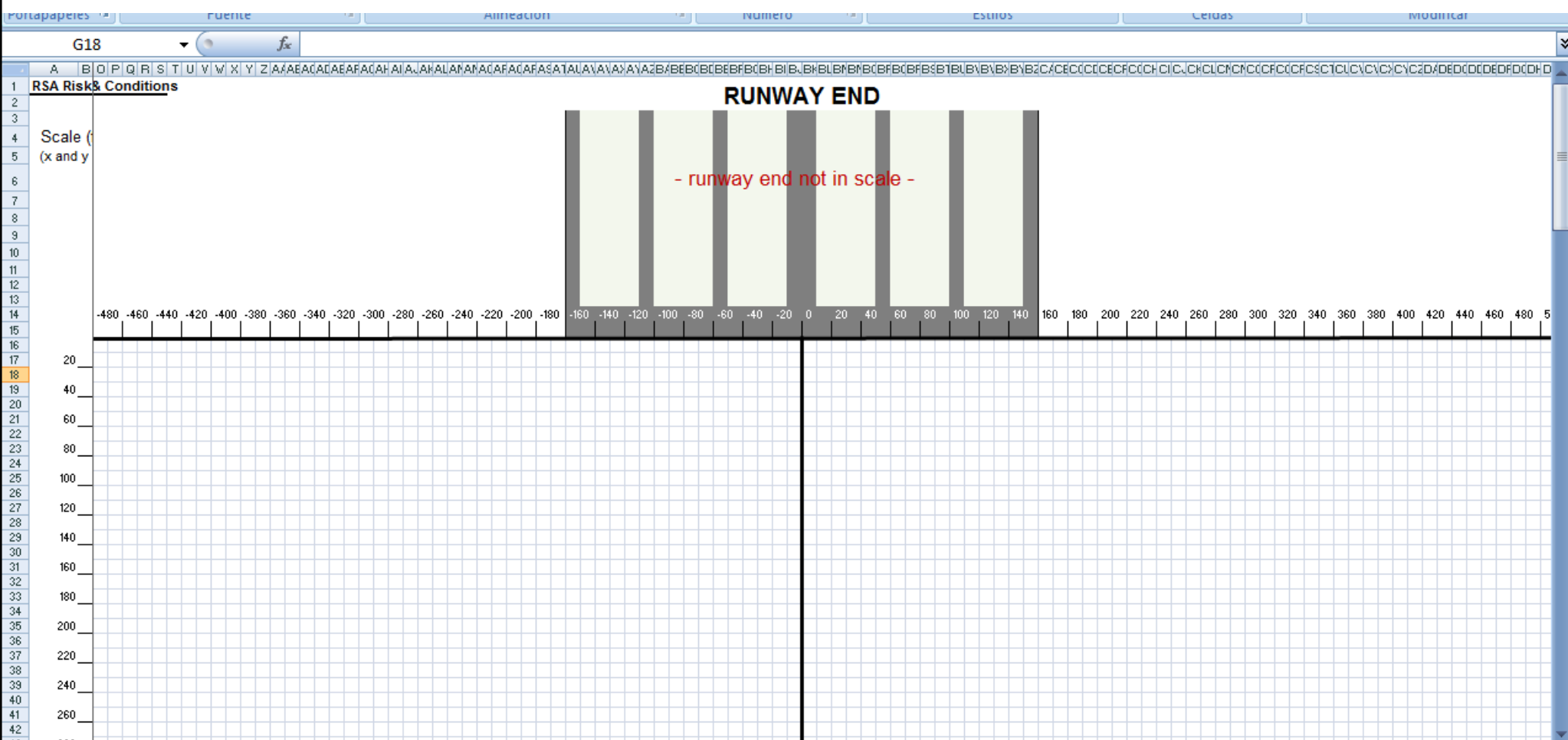


# Hacer lo mismo para el Undershoot de la pista 10

The image shows a software window titled "RSA Geometric Layout". At the top, there is a dropdown menu labeled "Select RWY:" with the value "10" selected. Below this, there are two main sections. The first section is titled "Area Adjacent to Arrival End (Overruns and Undershoots)". It contains two rows of controls. The first row is for "Overrun:" and the second row is for "Undershoot:". Each row has three buttons: "New RSA", "Browse Existing", and "Open Layout". To the right of these buttons are two empty text input fields labeled "File Name". The second section is titled "Side OFA Distance (Veer-offs)" and contains two text input fields labeled "Right Side (ft):" and "Left Side (ft):". At the bottom center of the window is a "Done" button. The window has standard Windows-style window controls (minimize, maximize, close) in the top right corner.

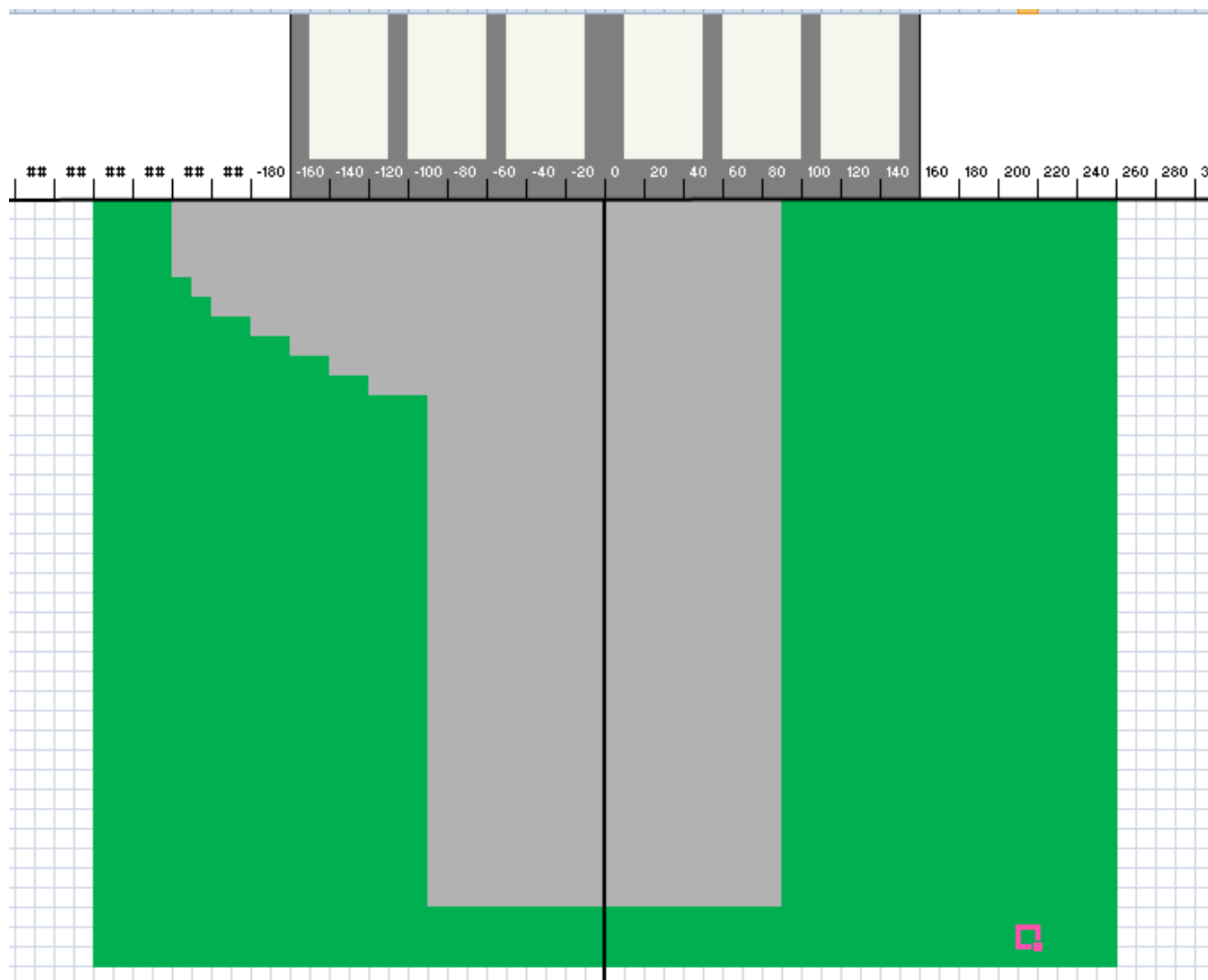
Hacer click en el botón “New RSA” en Undershoot

# Luego Ingresar la Geografía de la RSA



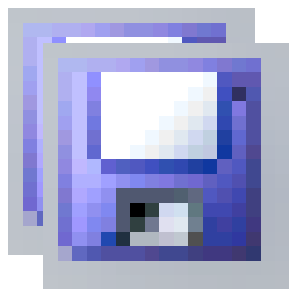


# Ingresar UnderShoot



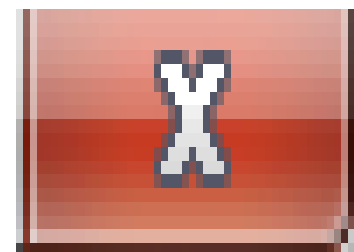
# Luego ...

**GUARDAR**



**Y**

**CERRAR**

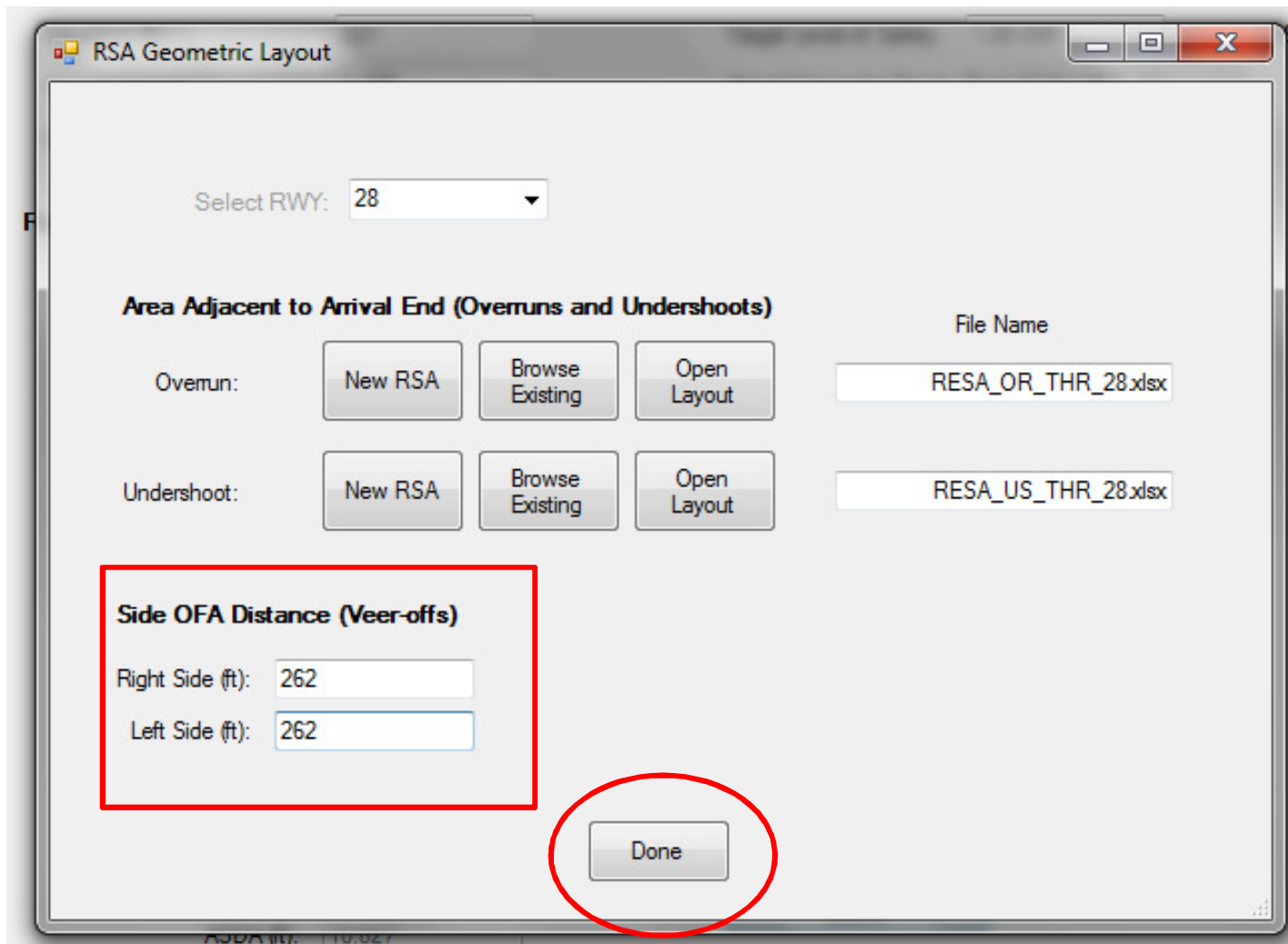


# Ingresar la configuración de RSA para pista 28

A screenshot of the 'RSA Geometric Layout' software window. The window has a title bar with standard Windows controls. Inside, there's a 'Select RWY:' dropdown menu with '10' selected and '28' highlighted in the list. Below this, the 'Area Adjacent to Arrival End (Overruns and Undershoots)' section contains two rows of controls. The 'Overrun' row has 'New RSA', 'Browse Existing', and 'Open Layout' buttons, followed by a 'File Name' field containing 'OR THR 10.xlsx'. The 'Undershoot' row has similar buttons and a file name field containing 'RESA\_US\_THR\_10.xlsx'. The 'Side OFA Distance (Veer-offs)' section has two input fields for 'Right Side (ft):' and 'Left Side (ft):', both set to '0'. A 'Done' button is at the bottom center. The window is slightly transparent, showing a background image of an airport runway.

**HACER LO MISMO PARA LA PISTA 28**

# Luego ingresar “Side OFA Distance”



**Este valor corresponde a la distancia entre el borde de pista y el borde de franja de pista o la punta de ala de una aeronave que circula por la calle de rodaje**

**Para este ejemplo consideramos 262 pies en ambos costados, luego de ingresado hacer click en “Done”**

# Luego...

**Airport Characteristics Input**

**Analyst:** PATRICIO AREVALO SALGADO **Project ID:** 9

**Airport Characteristics**

Elevation (ft): 227  
 Annual Volume: 3.000  
 Expected Traffic Growth (%): 3

**Risk Criteria**

Target Level of Safety: 1.0E-006 (E.g. 1.0E-6)  
 Airport Commuter Ops by Type of Aircraft? ☐  
 Airport Hub (Yes or No): ☐

**Runway Configuration**

	RWY_ID ▲	ASDA	LDA	Approach Category
▶	10	10.827	10.827	I
	28	10.827	10.827	VISUAL

Add RWY Save RWY Delete RWY

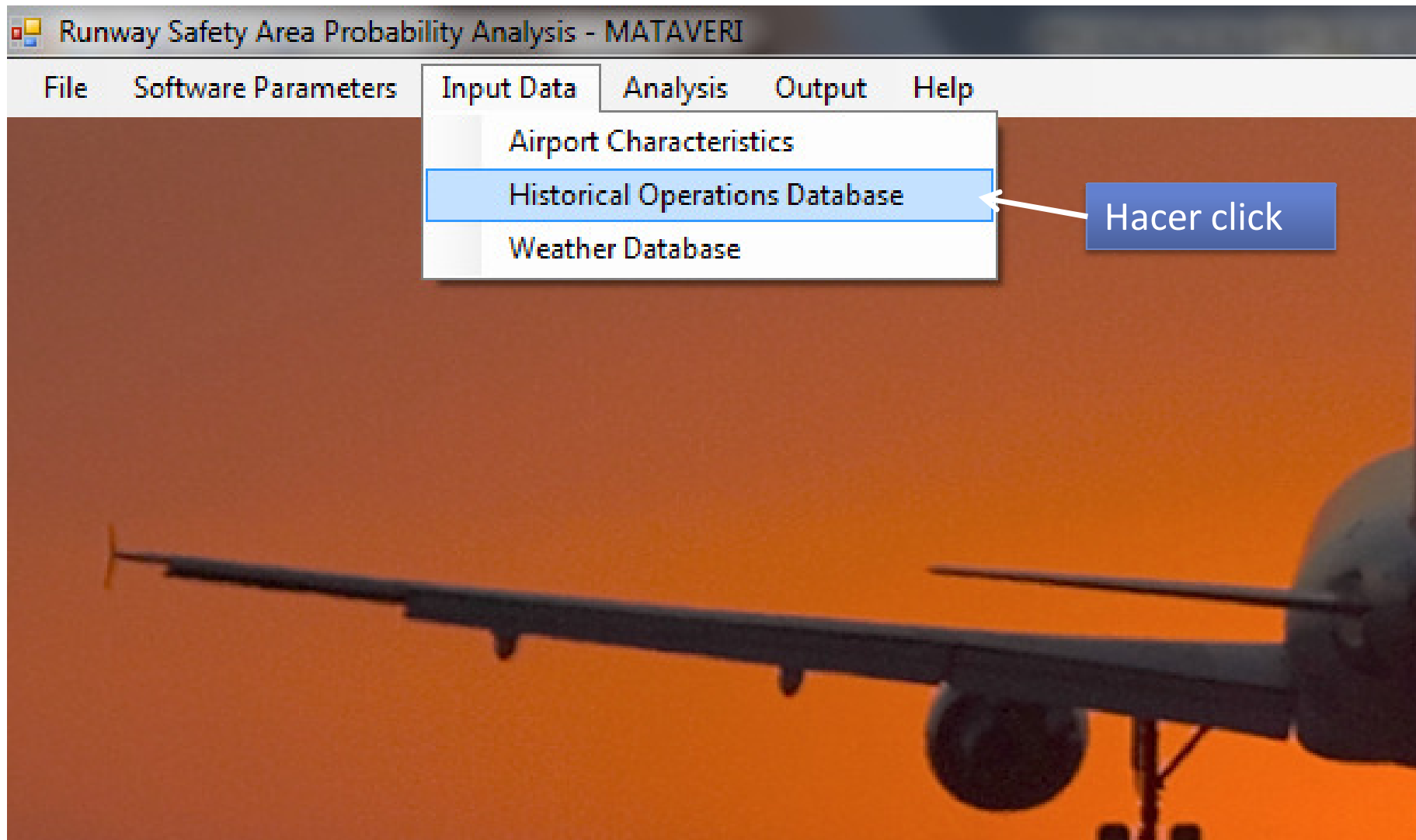
Project ID: 9  
 RWY ID: 10  
 ASDA (ft): 10.827  
 LDA (ft): 10.827  
 Category: I

Edit RSA Geometric Layout

Done

Luego hacer click en “Done”.

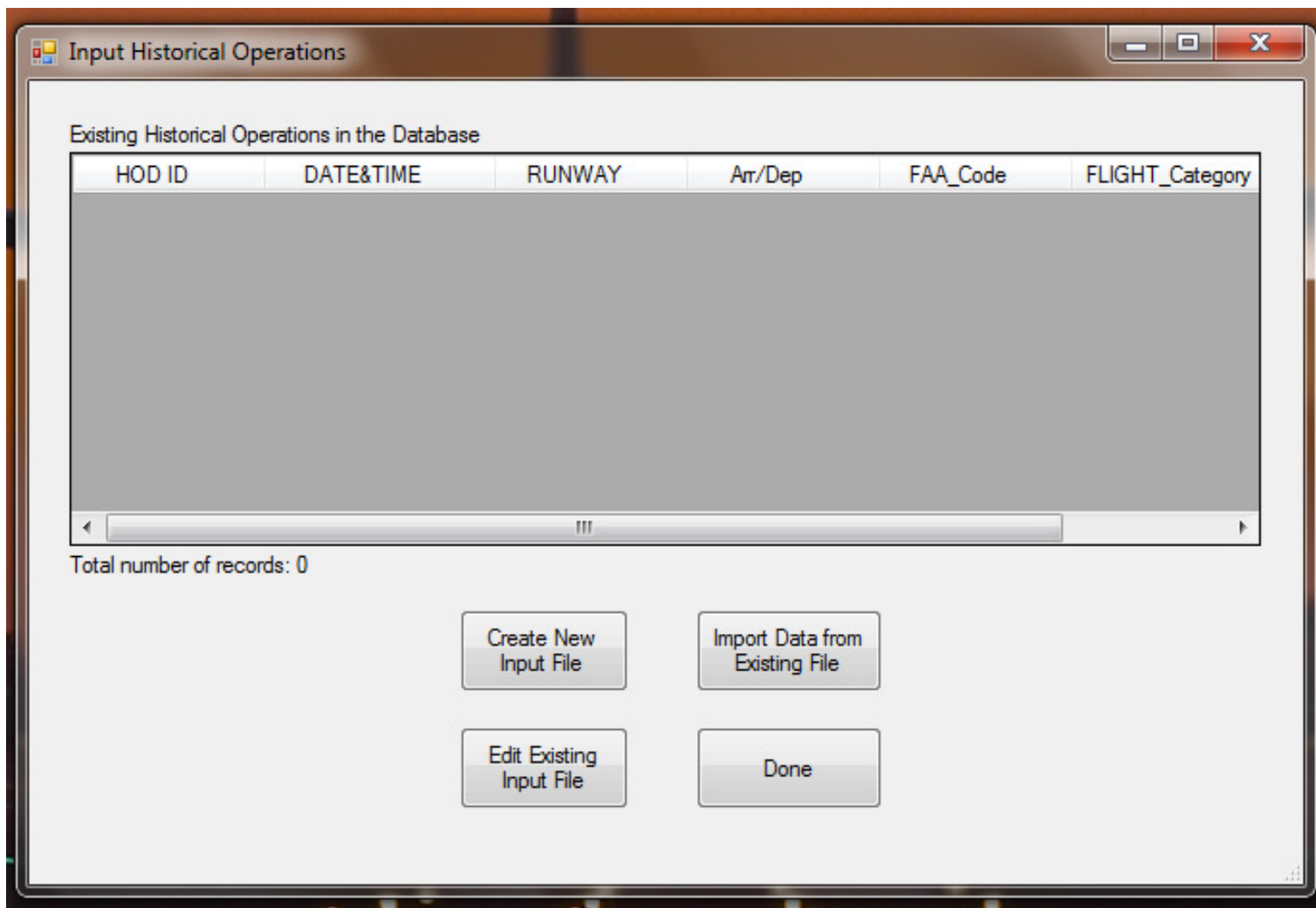
# Luego Cargar los Datos de Operaciones





# Luego...

**Para este ejercicio no se creará una nueva base sino que se utilizará una entregada por lo cual se debe hacer click en “import...”**

A screenshot of a software window titled "Input Historical Operations". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The main content area is titled "Existing Historical Operations in the Database" and contains a table with the following headers: "HOD ID", "DATE&TIME", "RUNWAY", "Arr/Dep", "FAA\_Code", and "FLIGHT\_Category". The table body is empty. Below the table, there is a scrollbar and the text "Total number of records: 0". At the bottom of the window, there are four buttons: "Create New Input File", "Import Data from Existing File", "Edit Existing Input File", and "Done".

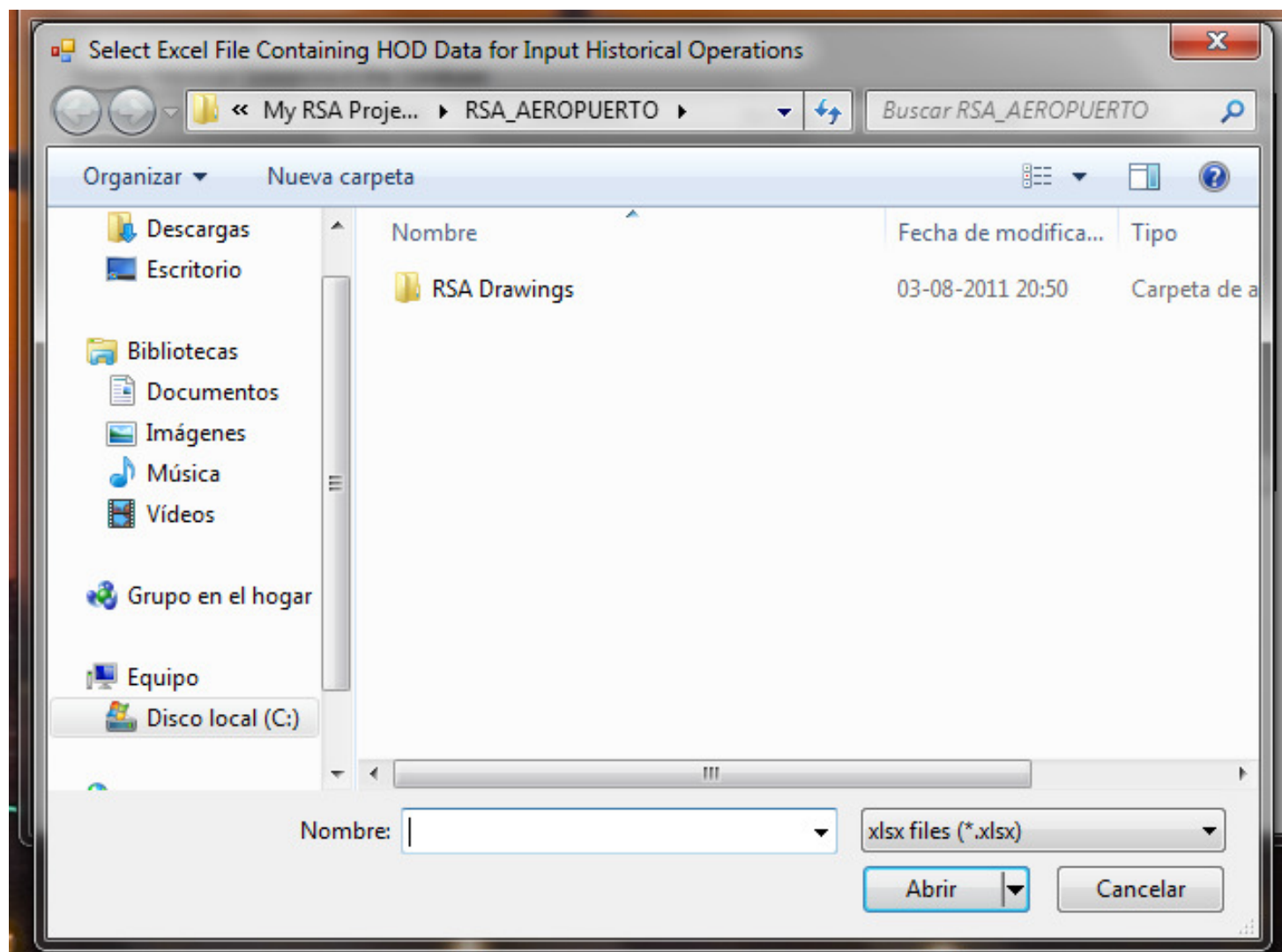
HOD ID	DATE&TIME	RUNWAY	Arr/Dep	FAA_Code	FLIGHT_Category
--------	-----------	--------	---------	----------	-----------------

Total number of records: 0

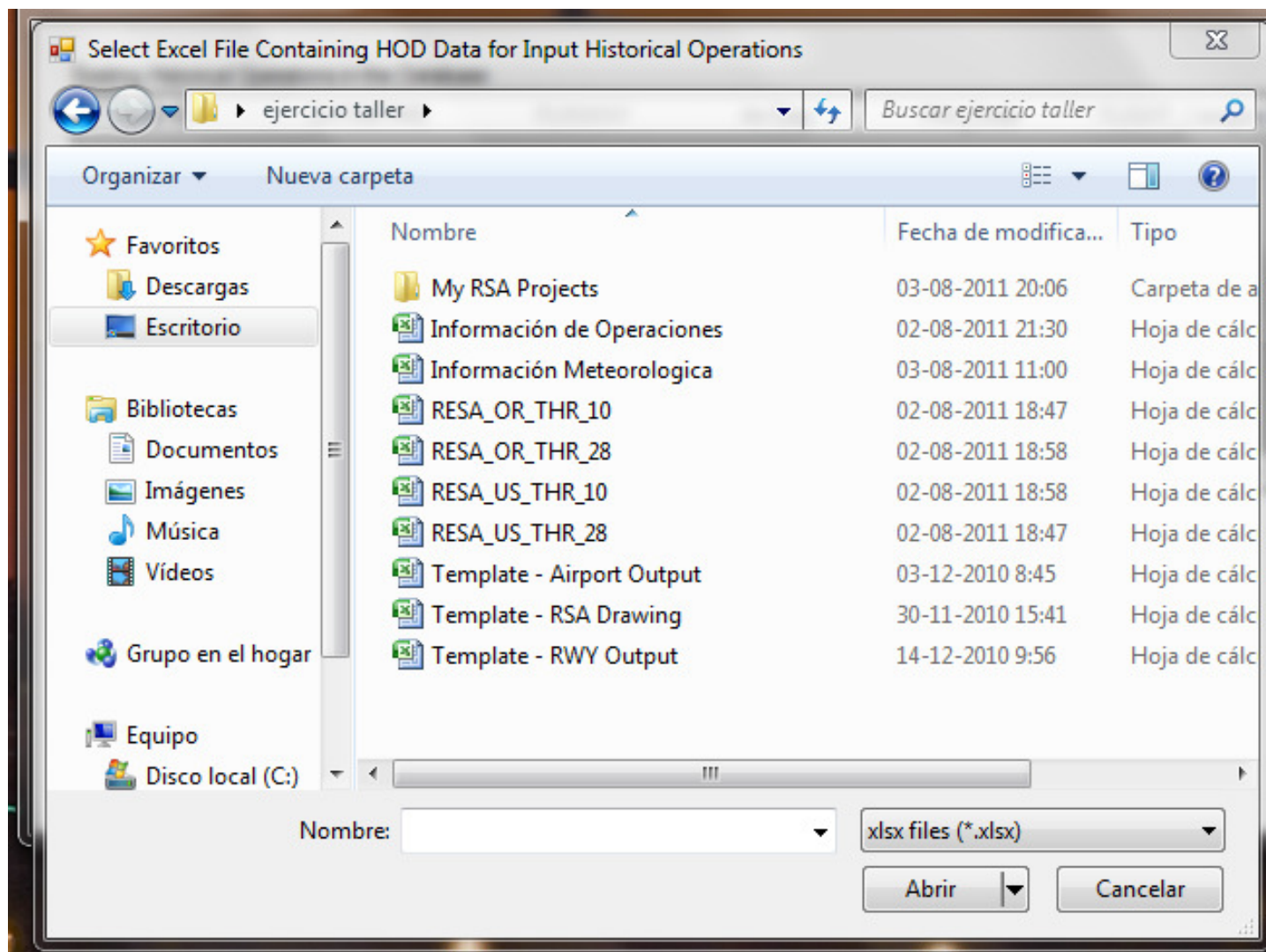
Create New Input File    Import Data from Existing File

Edit Existing Input File    Done

# Luego se debe buscar la base de datos en el PC

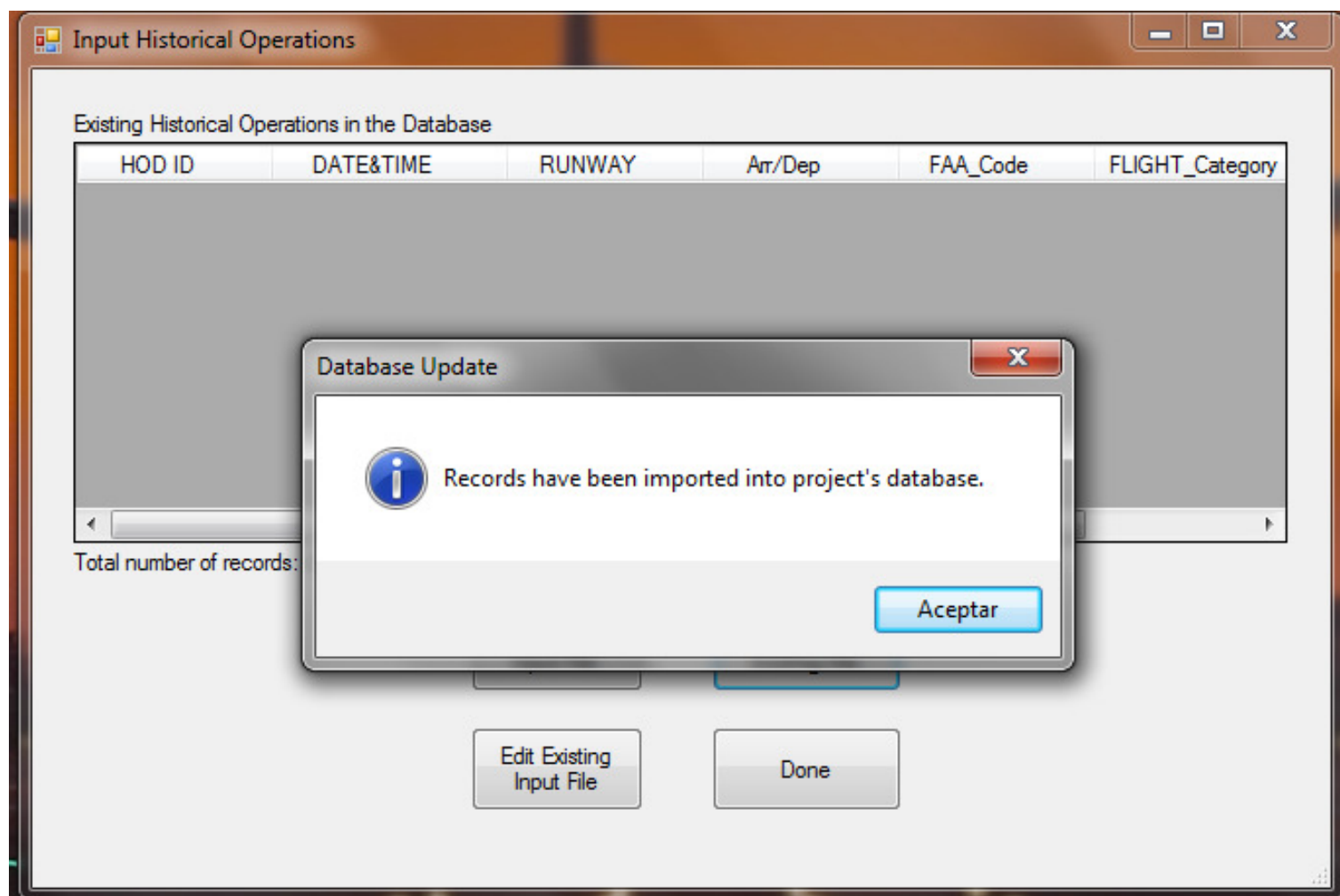


# Al encontrar la Base de Datos...



**Se debe  
seleccionar y  
Hacer click en  
Abrir**

# Y la base de datos se cargará



**Hacer click  
en Aceptar**

# De esta forma se aprecia..

Input Historical Operations

Existing Historical Operations in the Database

HOD ID	DATE&TIME	RUNWAY	BOUND	FAA_Code	FLIGHT_Categ
1	10-01-2006 0:03	10	A	A319	AIR
2	10-01-2006 0:14	28	A	MD83	AIR
3	10-01-2006 0:17	28	A	B752	AIR
4	10-01-2006 0:19	10	A	A320	AIR
5	10-01-2006 0:21	28	A	B752	AIR
6	10-01-2006 0:26	28	D	A319	AIR
7	10-01-2006 0:27	28	D	B744	AIR
8	10-01-2006 0:28	28	D	B744	AIR

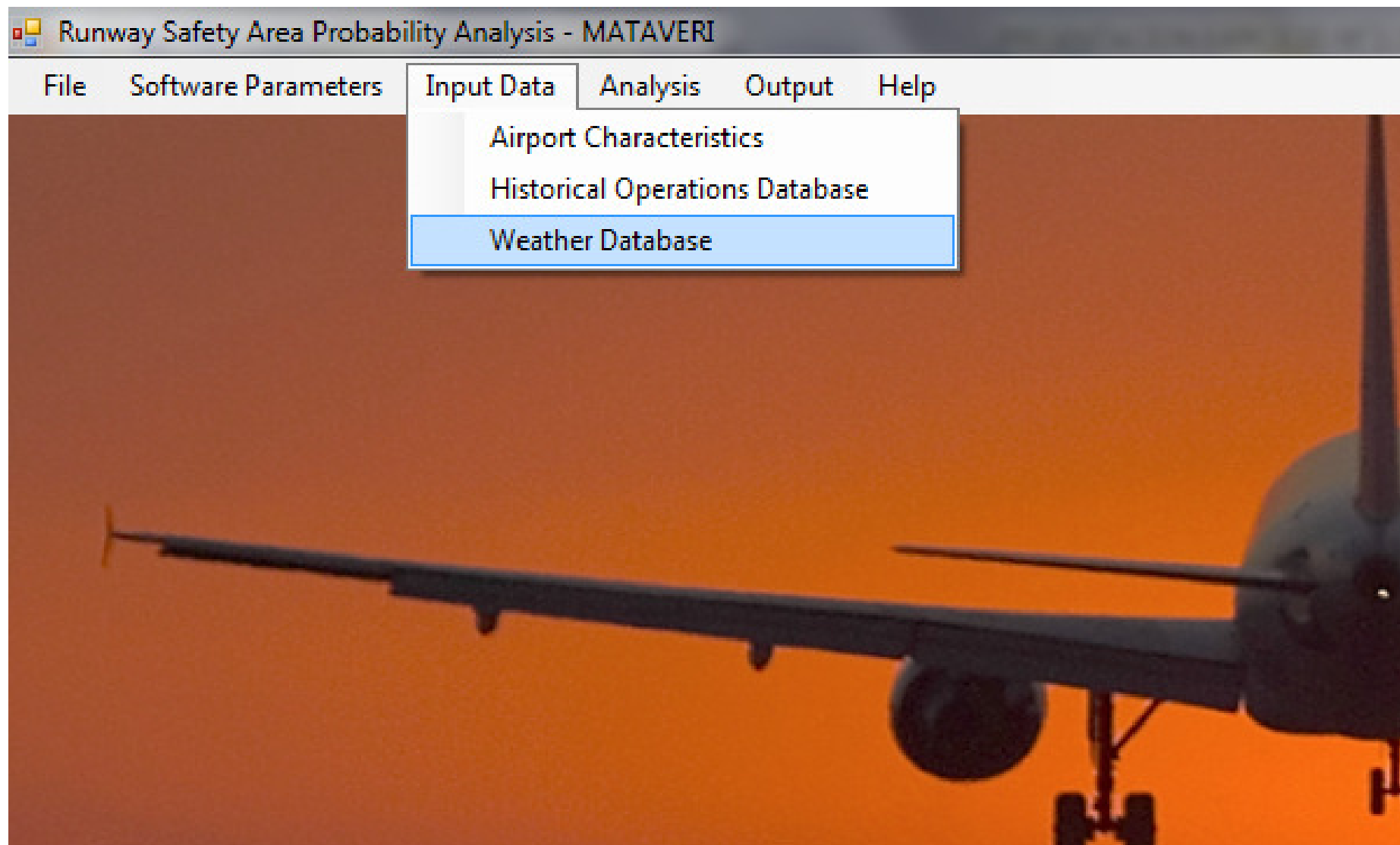
Total number of records: 1993

Create New Input File    Import Data from Existing File

Edit Existing Input File    Done

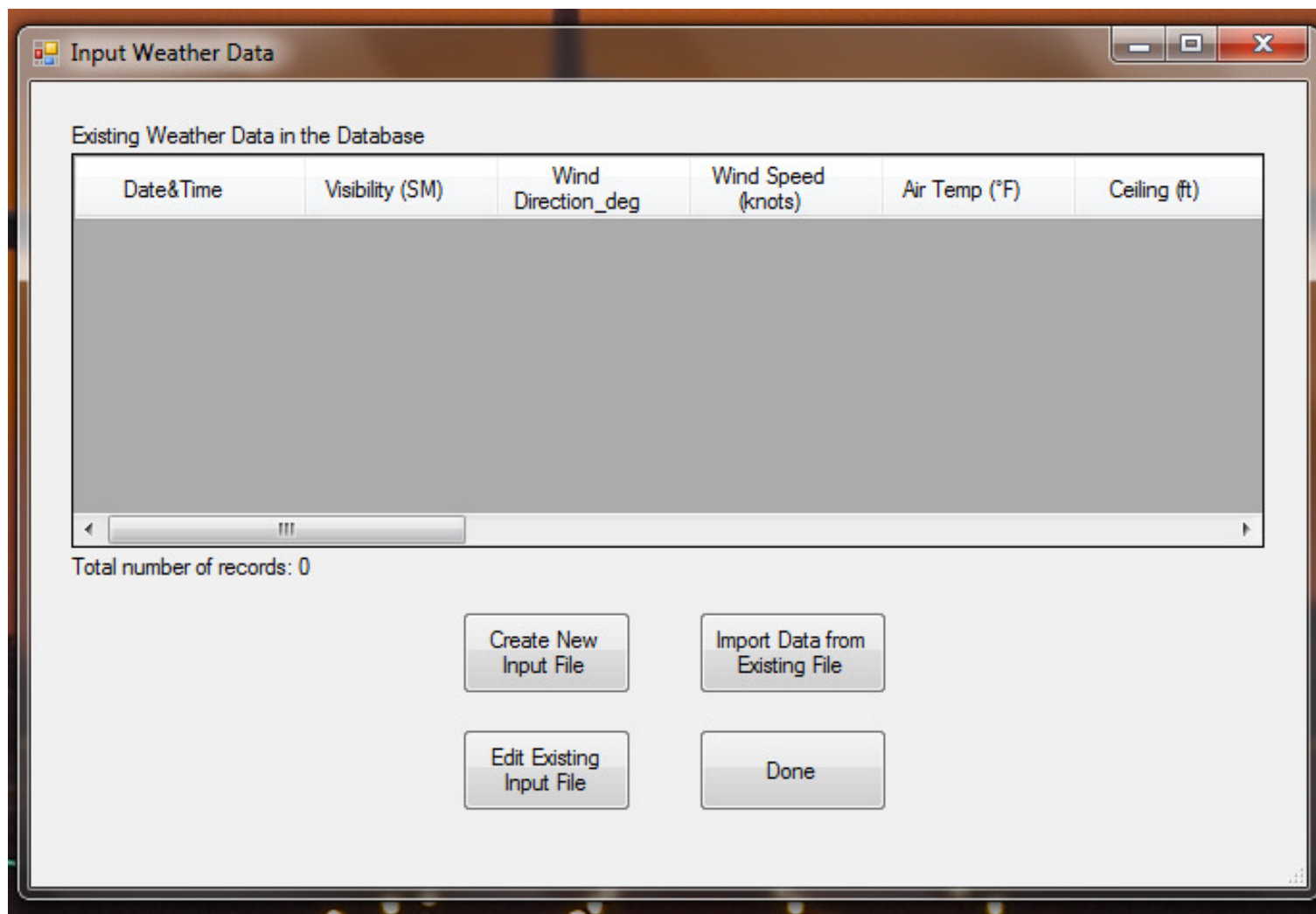
**Hacer click  
en Done**

# Luego hacer lo mismo para la información Meteorologica





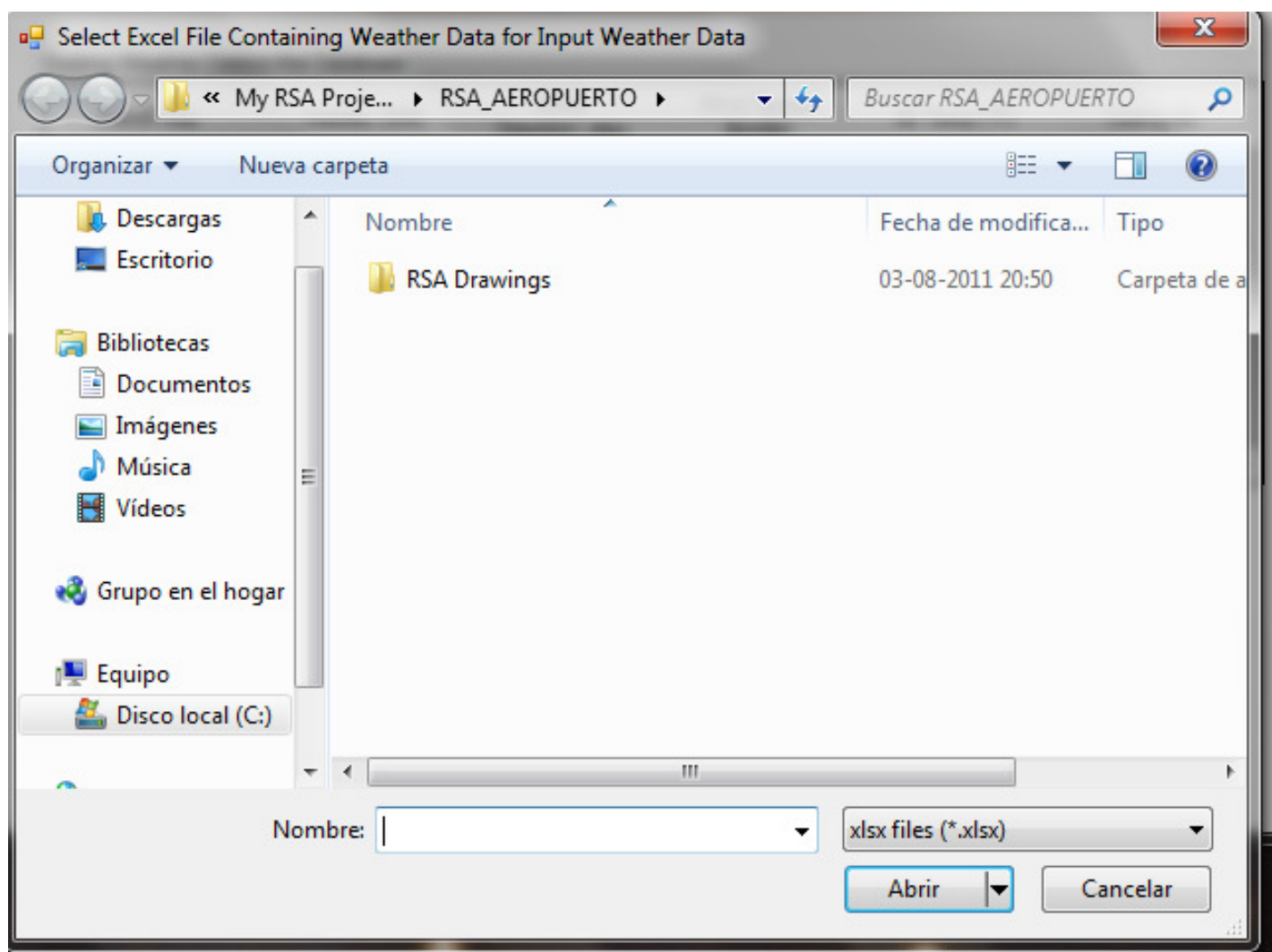
# Importar la base de datos Meteorológica

A screenshot of a software window titled "Input Weather Data". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. Inside the window, there is a section titled "Existing Weather Data in the Database". Below this title is a table with six columns: "Date&Time", "Visibility (SM)", "Wind Direction\_deg", "Wind Speed (knots)", "Air Temp (°F)", and "Ceiling (ft)". The table is currently empty. Below the table is a scrollbar. At the bottom left of the window, it says "Total number of records: 0". At the bottom right, there are four buttons arranged in a 2x2 grid: "Create New Input File", "Import Data from Existing File", "Edit Existing Input File", and "Done".

Date&Time	Visibility (SM)	Wind Direction_deg	Wind Speed (knots)	Air Temp (°F)	Ceiling (ft)
-----------	-----------------	--------------------	--------------------	---------------	--------------

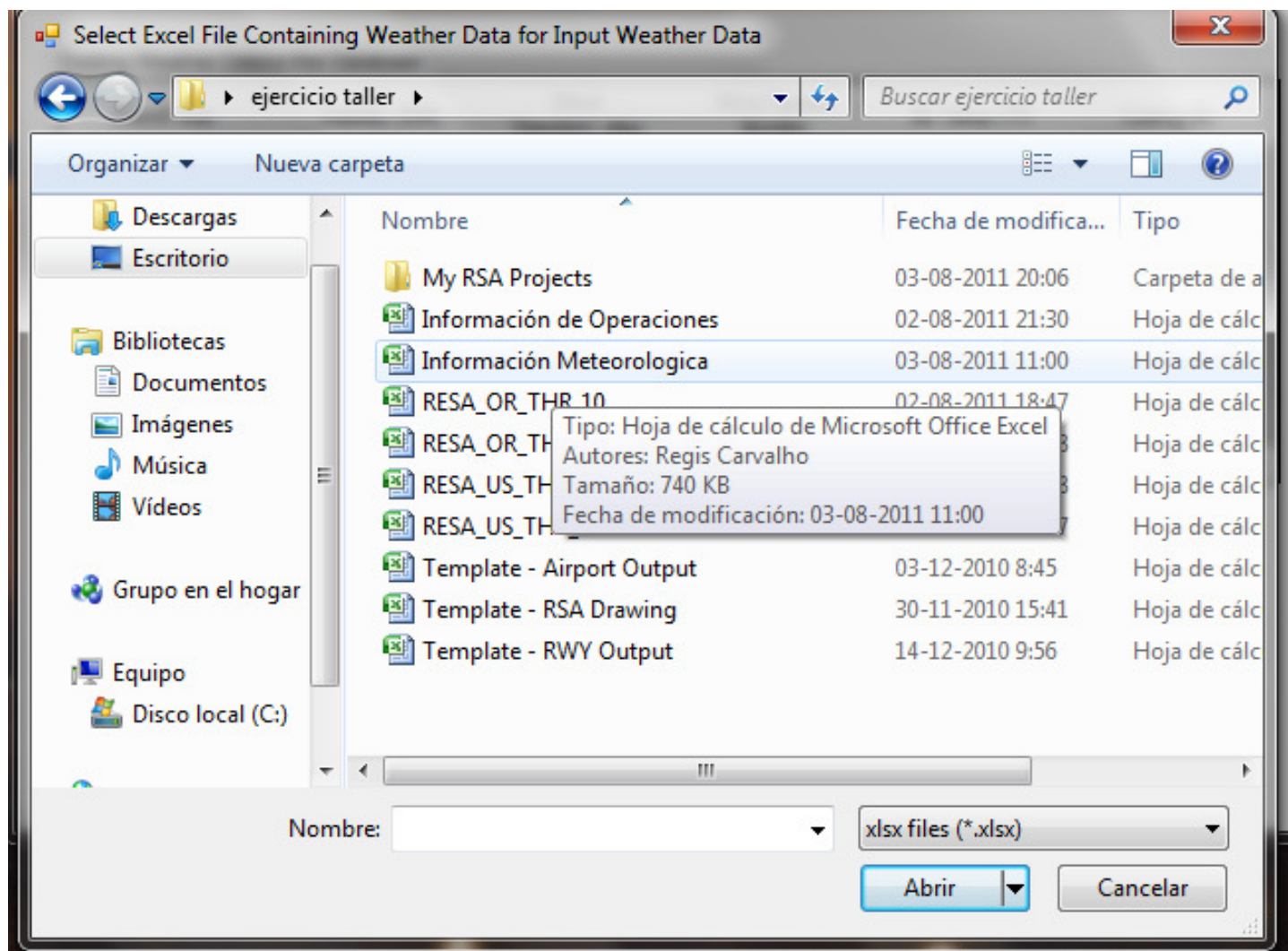
**Hacer click  
en Import...**

# Buscar en el PC la base Meteorológica



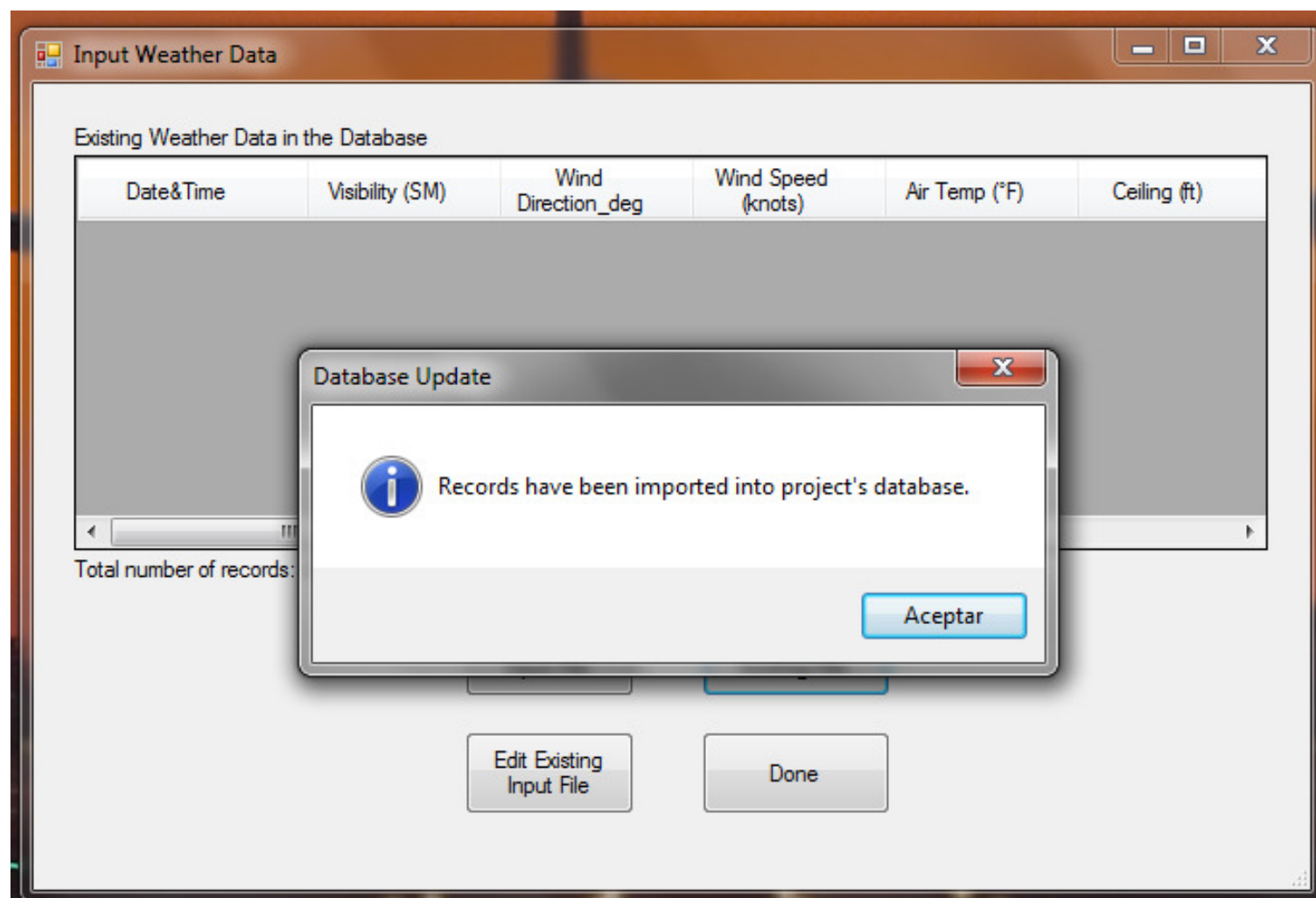


# Al encontrar la base de datos...



**Seleccionarla y  
hacer click en  
Abrir**

# Y la base Meteorológica se Carga...



# Luego hacer click en Done.

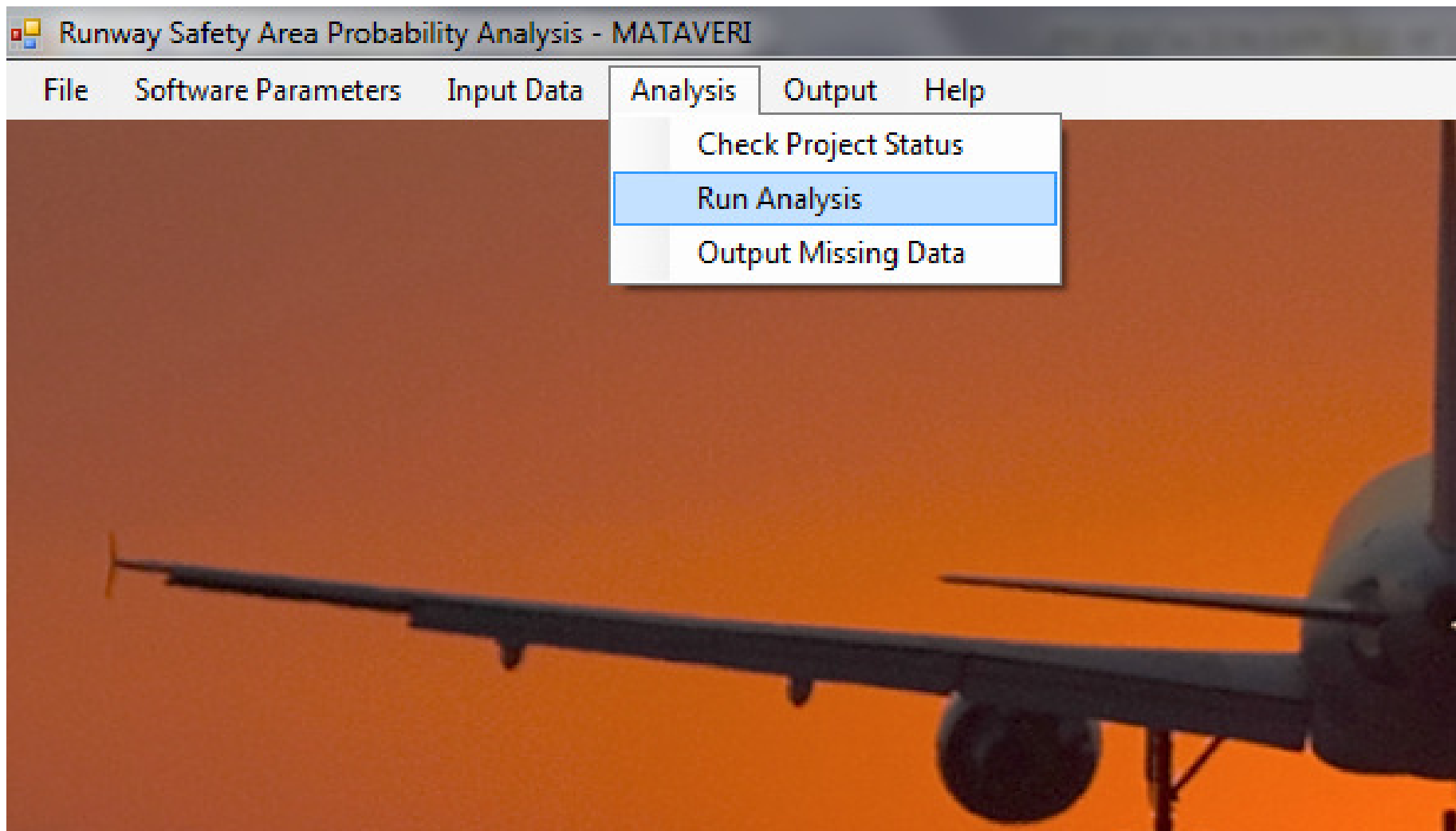
Input Weather Data

Existing Weather Data in the Database

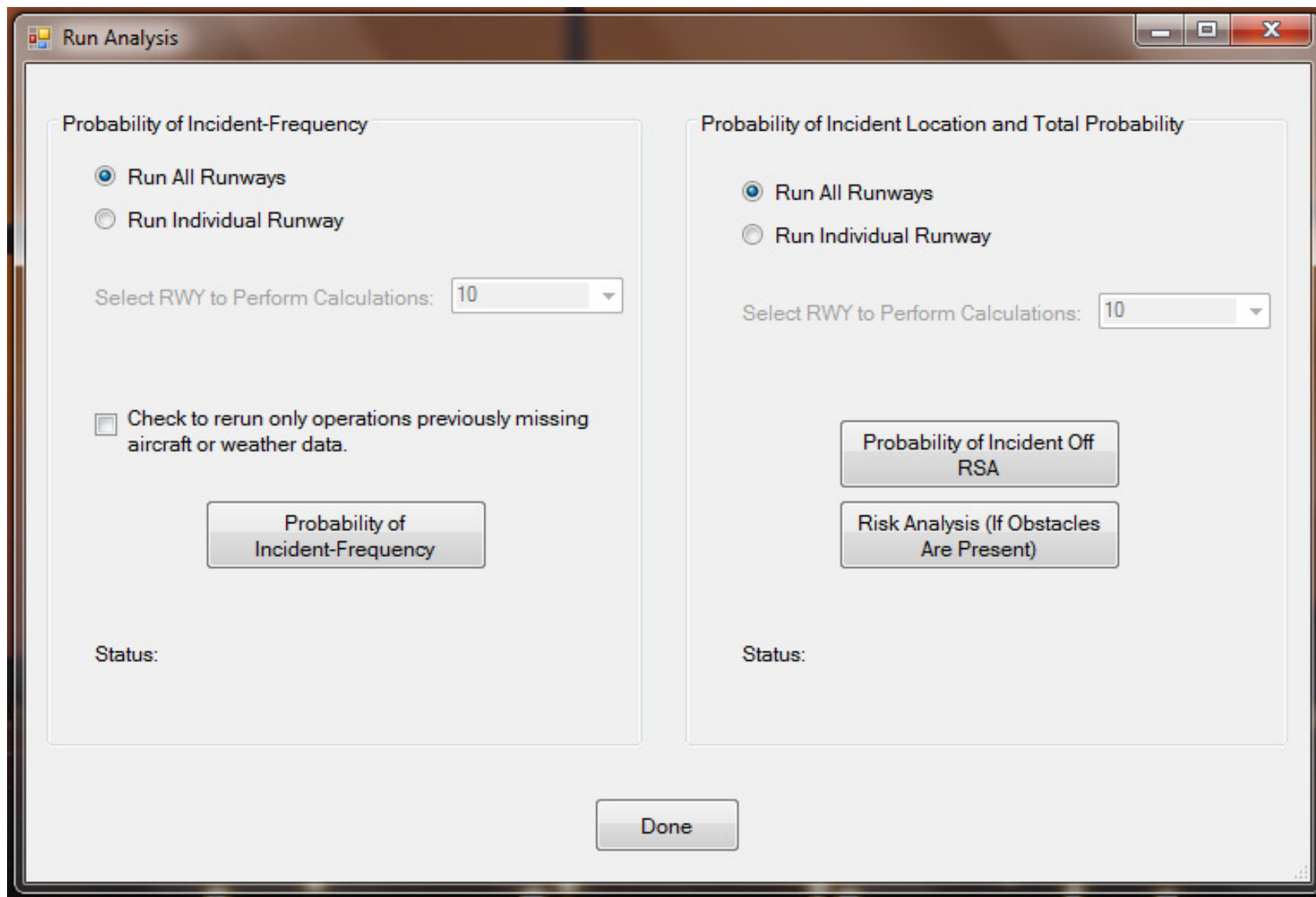
Date&Time	Visibility (SM)	Wind Direction_deg	Wind Speed (knots)	Air Temp (°F)	Ceiling (ft)
01-01-2006 1:00	10	120	10	52	10000
01-01-2006 2:00	10	140	7	48	10000
01-01-2006 3:00	10	130	3	48	10000
01-01-2006 4:00	10	140	3	48	10000
01-01-2006 5:00	10	140	5	50	10000
01-01-2006 6:00	10	120	12	52	10000
01-01-2006 7:00	10	140	11	52	10000

Total number of records: 8639

# Ahora se debe hacer el Análisis de Datos

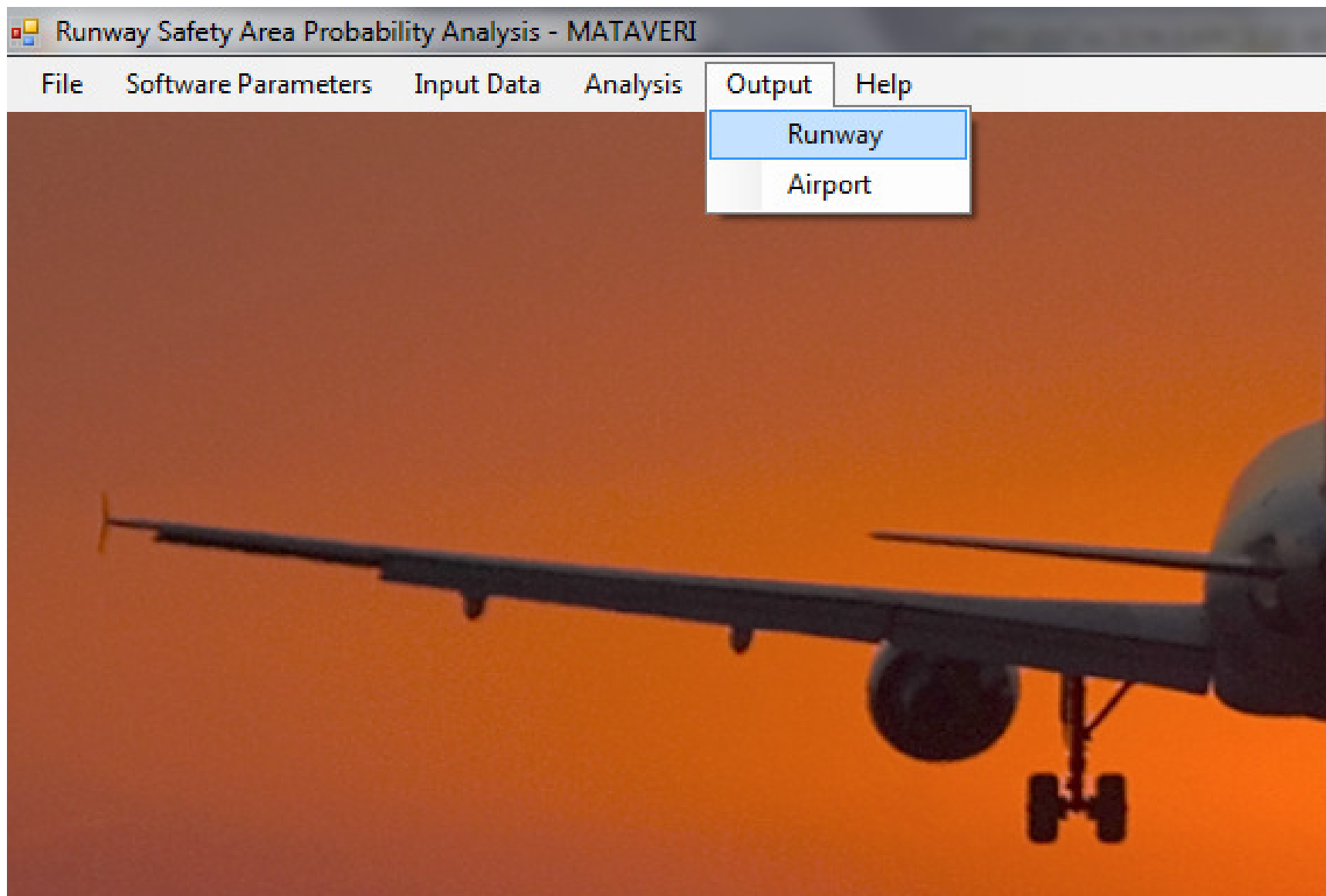


# Se deben hacer todos los análisis..

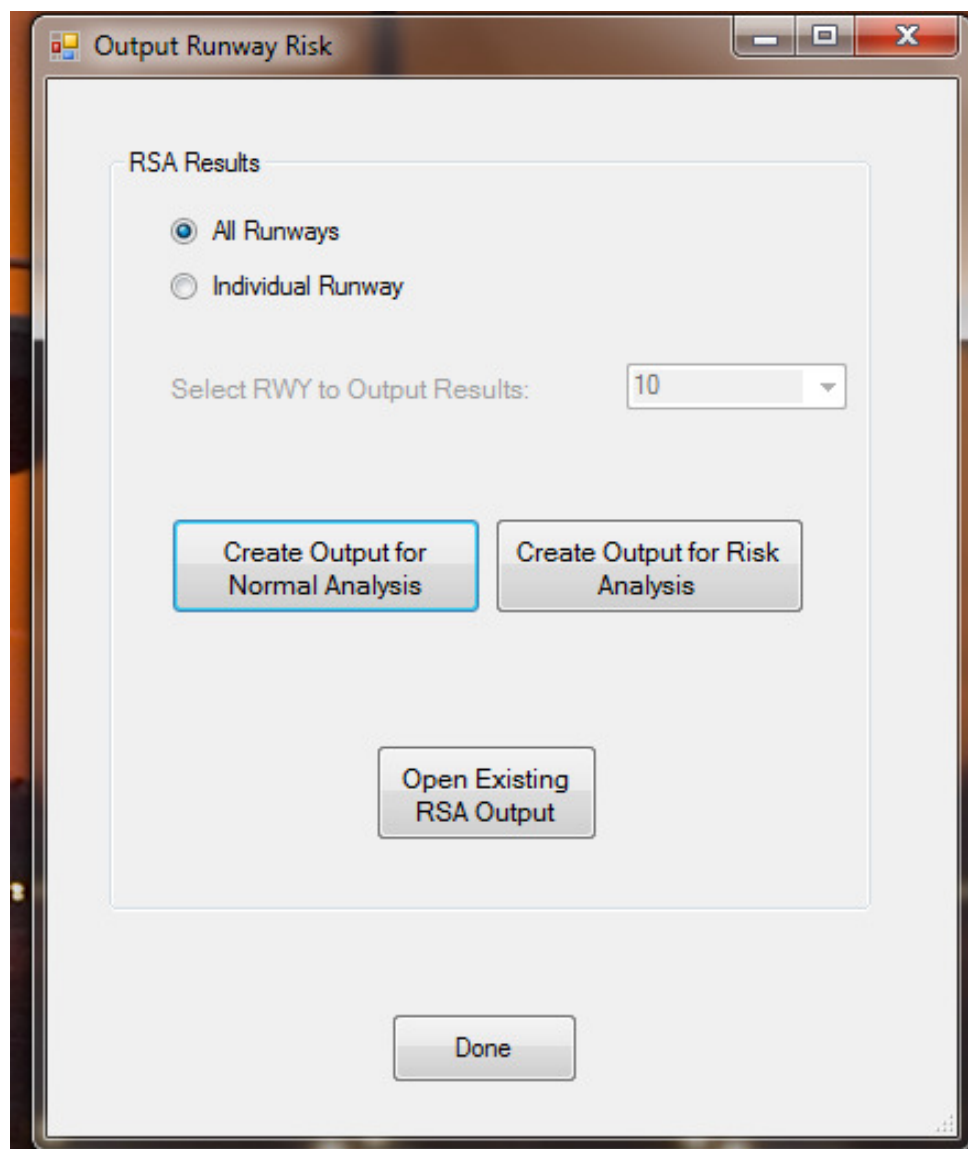
The image shows a software dialog box titled "Run Analysis". It is divided into two main sections. The left section, titled "Probability of Incident-Frequency", contains two radio buttons: "Run All Runways" (selected) and "Run Individual Runway". Below them is a dropdown menu labeled "Select RWY to Perform Calculations:" with the value "10". There is also a checkbox labeled "Check to rerun only operations previously missing aircraft or weather data." and a button labeled "Probability of Incident-Frequency". The right section, titled "Probability of Incident Location and Total Probability", also has two radio buttons: "Run All Runways" (selected) and "Run Individual Runway". It features a similar dropdown menu for "Select RWY to Perform Calculations:" with the value "10". Below this are two buttons: "Probability of Incident Off RSA" and "Risk Analysis (If Obstacles Are Present)". Both sections have a "Status:" label at the bottom. A "Done" button is centered at the bottom of the dialog box.



# Luego se emiten los informe, primero por Runway...



# Luego...

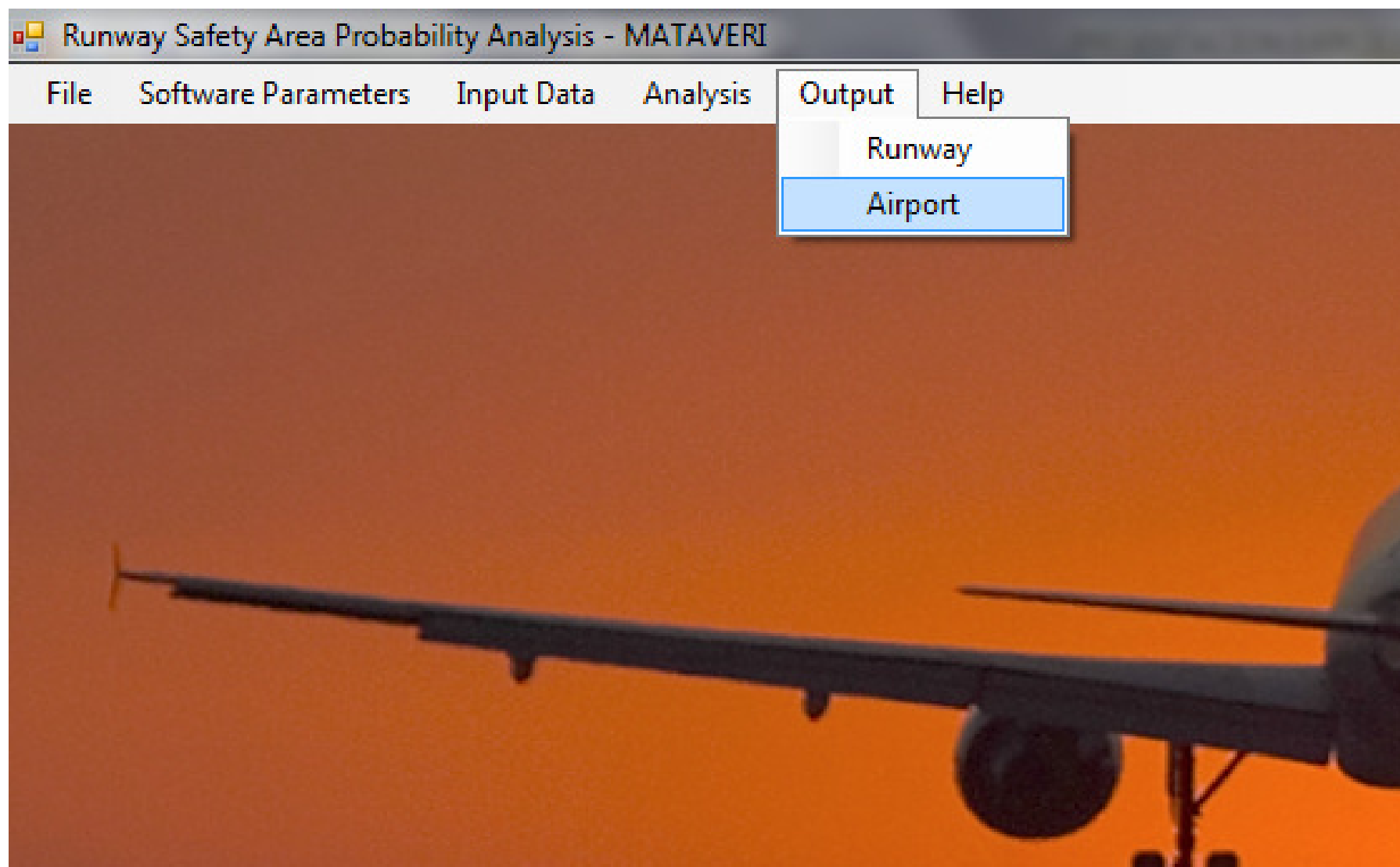


**1° Crear Informe para un Análisis Normal**

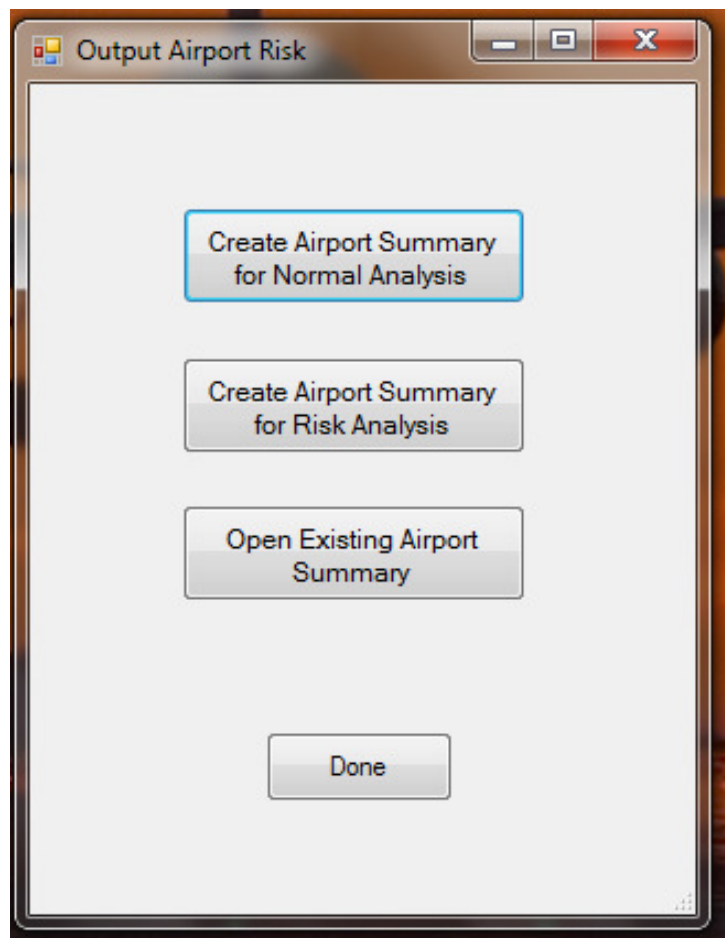
**2° Crear Informe para un Análisis de Riesgo**

**3° Hacer click en Done**

# Ahora los informes por Aeropuerto



# Se deben crear los informes



**1° Crear el Resumen del Aeropuerto para un Análisis Normal**

**2° Crear el Resumen del Aeropuerto para un Análisis de Riesgo**

**3° Hacer click en Done**

# Con la información Anterior

**Con los informes se debe realizar la interpretación de los datos para elaborar el informe de Estudio Aeronáutico.**





International Civil Aviation Organization

Taller Sobre Estudios Aeronáuticos

**MUCHAS GRACIAS**

*Lima, 01 al 04 Agosto de 2011*