PROCESS FLOW for IGT4SAR

Arrive on the Scene:
OPEN: ARCMap
SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B Select Utilities, Select and* ***RUN: Create New Incident***
Create New Incident Dialogue Box Opens:
SELECT: a Target Folder for your Searches and type a new folder name – Area and Date **Keymar09-01-14**
SELECT: Target Coordinate System
SELECT: Transformation
Add: Subjects Name
Add: Incident Name
Add: Incident Number (MD-MM-DD-YY-0#)
Add: Lead Agency
CLICK: OK
The Script will run – 5 to 10 minutes to run
CLICK: Close
CLICK: File **SELECT:** Open – Go Find the Folder just created **SELECT** the Map Document: **MD-MM-DD-YY**
CLICK: Add Data from ARCgis Online Select US_TOPO or MDIMAP – GIS Service – 6" Imagery

Create an Initial Planning Point:

Where is the IPP/PLS/LKP

RIGHT CLICK: Planning Point – 1 Incident Group -
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select PLS/LKP Icon and Place it on this actual location.
RIGHT CLICK: Planning Point
SELECT: Open Attribute Table, Enter Data

Incident_Name, IPPClass, UTM_E, UTM_N, Latitude, Longitude, Subject_Number, IPPType
SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters – Select and* **RUN: Update Domain** *then* **RUN: Update Map Layout** *then*

Update Missing Person Information:

Who is the missing subject

RIGHT CLICK: Subject Information – 1 Incident Group -
SELECT: Edit Features, Start Editing
RIGHT CLICK: Subject Information
SELECT: Open Attribute Table, Enter Data

Subject_Number, Name, Category, Group_Size, Gender, Height, Weight, Build, Complexion, Hair, Eyes, Other, Shirt, Pants, Jacket, Hat, Footwear, Info, Cellphone, Photo_Available, Age, WhereLastSeen, Race, Date_Seen, Time_Seen, QRCode

Close the Attribute Table
SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

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Create Statistical Distances:

SELECT: *Arctoolbox*
Planning Extended Version
RUN: A. Statistical Search Area - IPP

Select Subject Number, IPP, Distance Selection [Use Subject Category], Buffer Units [Miles],
This will create the 25%, 50%, 75%, and 95% Rings for the subject category in Subject Information

Update Data Fields:

Who is reporting the person missing

RIGHT CLICK: Reporting Party – 1 Incident Group -
SELECT: Edit Features, Start Editing
RIGHT CLICK: Reporting Party
SELECT: Open Attribute Table, Enter Data

Name, Cell_Phone, Land_Line, email, Relationship, Notes, Clue_Number, Date_Time, Subject_Number

Who is the Incident staff

RIGHT CLICK: Incident Staff – 4 Teams_Group -
SELECT: Edit Features, Start Editing
RIGHT CLICK: Incident Staff
SELECT: Open Attribute Table, Enter Data

Staff_Name, Staff_Org, Staff_CellPhone, Emg_Cont, Emg_ContPh

Who is the lead Agency

RIGHT CLICK: Lead Agency – 4 Teams_Group -
SELECT: Edit Features, Start Editing
RIGHT CLICK: Lead Agency
SELECT: Open Attribute Table, Enter Data

Lead_Agency, Responsible_Auth, Lead_Phone, Lead_Address, Lead_City, Lead_State, E_Mail, Lead_Zip

SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters* ***– SELECT:*** *and* ***RUN: Update Domain***
Incident Info

RIGHT CLICK: Incident Information – 1 Incident Group -
SELECT: Edit Features, Start Editing
RIGHT CLICK: Incident Information
SELECT: Open Attribute Table, Enter Data

Incident_Number, Incident_Name, Environment, Eco_Region, Pop_Den, Terrain, LandCover, LandOwner, Comms_Freq, Base_PhoneNumber, MapDatum, MapCoord, MagDec, Lead_Agency – (will be a drop down based on the info filled in on Lead Agency feature class)*, Incident_Type*

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Operation Period

RIGHT CLICK: Operations Period – 1 Incident Group -
SELECT: Edit Features, Start Editing
RIGHT CLICK: Operations Period
SELECT: Open Attribute Table, Enter Data

Period, Start_Date, End_Date, Period Objectives, Weather, Max Temperature, Temp_min, Wind (mph), WIndDir, Rain, Snow, Light, Safety_Message, Communication_Freqs, Emergency Communications Freqs, Lead Agency (Lead Agency), SAR Managers (Incident Staff), Planning_Chief (Incident Staff), Operations_Chief (Incident Staff), Air_Operations_Chief (Incident Staff), Logistics_Chief (Incident Staff), Transportation_Chief (Incident Staff), Finance_Chief (Incident Staff), Safety Officer (Incident Staff), Information Officer (Incident Staff), Family Liason (Incident Staff), Period Text.

SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters –* ***SELECT:*** *and* ***RUN: Update Domain***

Right Click on Dataframe name and select Properties – Click on **General Tab** – Name: Change to Name Date, Under **Units**: Display U.S. National Grid and under **Label Engine** select Maplex Label Engine. Click OK and then Save Entire File.

At this point choose to Deploy Resources or Build out base data:

Some Base Data to consider:

- Roads, Rail Roads, Hydrology – Streams and Area , Trails,
- Topo Map, Ortho Map, DEM, Local Trail Map Picture

Note: Once basic Base Data is collected this is a decision point:

1. Collect/Clip additional base data
2. Develop Hasty Tasks
3. Develop Probability Zones/Regions segments
4. Analyze – Dispersion Angle, Track Offset, Mobility
5. Create Assignments
6. Analyze Cell Phone or Radio Propagation

Define your Initial Search Area (ISA):

Search Boundary

RIGHT CLICK: Search Boundary
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select Search Boundary Icon and Draw the Intial boundary.
RIGHT CLICK: Search Boundary
SELECT: Open Attribute Table, Enter Data

Area_Name, Region_Name, Status, Area, Area_Description, Searched, Period_Optional, Probability_Density, Display, POAcum, POScum, POScumUn, Coverage, POStheo, ResourceType_PSR, SearchTime_hr, Coverage_PSR, PSR, PODest, POS, NumSearch, Shape_Length , Shape_Area

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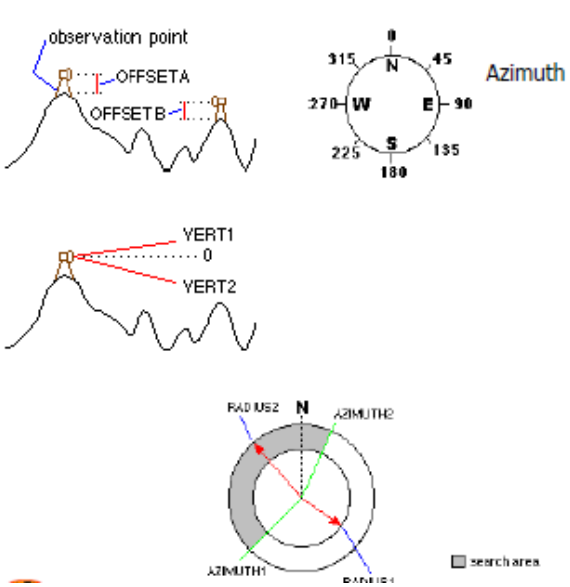
Define Assets: Incident Assets – Command Post, Helo Spot, Radio Relay, and Etc.

Where are the Command Post, Helo Spot, and Base Radio

RIGHT CLICK: Assets – 2 Incident Assets -
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select Command Post Icon and Place it on this actual location.
RIGHT CLICK: Assets
SELECT: Open Attribute Table, Enter Data
Operational_Period, Asset_Type, Description, Status, UTM_Easting, UTM_Northing, Latitude, Longitude, OffsetA, OffsetB, Azimuth1, Aximuth2, Vert1, Vert2, Radius1, Radius2

SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

Remember that the Information in Assets have the Latitude, Longitude, OffsetA, OffsetB, Azimuth1, Aximuth2, Vert1, Vert2, Radius1, Radius2 because the Viewshed Surface Model under the Spatial Analyst Tools uses this fields.



OFFSETA	vertical distance in surface units to be added to the z-value of the observation point (Antenna Height)
OFFSETB	vertical distance in surface units to be added to the z-value of each cell as it is considered for visibility (Receiver antenna height – person)
AZIMUTH1	Defines the start angle of the scan range
AZIMUTH2	Defines the end angle of the scan range. The value for AZIMUTH2 must be greater than that of AZIMUTH1.
VERT1	Defines the upper horizontal angle limit of the scan (default = 90)
VERT2	Defines the lower horizontal angle limit of the scan (default = -90). The value for VERT2 must be less than that of VERT1.
RADIUS1	Defines the start distance from which visibility is determined
RADIUS2	Cells beyond the RADIUS2 search distance are excluded from the analysis. The value for RADIUS2 should be greater than RADIUS1.

PROCESS FLOW for IGT4SAR

Deploy Resources:

Creating Some Quick Assignments:

Create Hasty Points, Lines, and Segments

RIGHT CLICK: Hasty Point
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select Hasty Point Icon and Place it on PLS/LKP or other locations.
RIGHT CLICK: On the Point Created SELECT: Attributes
SELECT: *Area_Name* *and Add a name or Description*

RIGHT CLICK: Hasty Line
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select Hasty Line Icon and Draw.
RIGHT CLICK: On the Point Created SELECT: Attributes
SELECT: *Area_Name* *and Add a name or Description*

RIGHT CLICK: Hasty Segment
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select Hasty Segment Road or Trail Icon and Draw
RIGHT CLICK: On the Point Created SELECT: Attributes
SELECT: *Area_Name* *and Add a name or Description*

Create as many as needed for your Incident
SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters – Select and* ***RUN: Update Domain*** *then* ***RUN: Search Area Names***

To create additional assignments you can go to search segments and create as many segments as needed. Then once completed you need to update domain and Search Area Names.

> ***SELECT:*** *Arctoolbox*
> ***OPEN:*** *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters – Select and* ***RUN: Update Domain*** *then* ***RUN: Search Area Names***

This allows you to go into **assignments** and select area and name to create the assignments.

PROCESS FLOW for IGT4SAR

Create Assignments:

Need to transfer Hasty Point and Line to Assignment Group

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Operations – Select and* ***RUN: Hasty Point Assignments*** *then* ***RUN: Hasty Line Assignments***

Assignments

RIGHT CLICK: Assignments
SELECT: Edit Features, Start Editing
RIGHT CLICK: Assignments
SELECT: Open Attribute Table, Enter Data

Leave Assignment #'s Alone, Planning Number is Day and sequential Number 03-01, 03-02, and etc. You will see that the Hasty Point and the Hasty Line Searches are there but you will to go to a new line and select the Hasty Segment under Area Name in Drop Down. Select Yes under Create Map, Select Scale if different that 1:24000. Period will not be available. Double check the Description and add what you want to appear on the Task assignment sheet.

Planning_Number, Assignment_Number, Priority, Status, Description, Team, Resource_Type, Safety_Note, Period, Division, Prepared_By, TimeOut, Milage, Map_Scale, Previous_Search, Create_Map, Area_Name, Create_gpx

SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

Creating Task Assignment Forms:

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Operations – Select and* ***RUN: Create Assignment Forms***

This will run an application and export the data and make PDF Maps and Task Assignment Forms in a fillable format.

SELECT: A folder for the search and select Assignment Folder
SELECT: Assignment Numbers
CLICK: OK

At this Point you are still in the Hasty Mode and can create additional assignments. I would go to Operational Period and update Objectives.

Deploy Your Resources.

PROCESS FLOW for IGT4SAR

Developing Segments and Probability Regions

Develop your Probability of Area based on Regions and then subdivided into Search Segments.

Probability Regions:

RIGHT CLICK: Probability Regions
SELECT: Edit Features, Start Editing
SELECT: Create Features, Select Probability Regions Icon and Draw the Search Regions.

Note: Once you click **Create Features** and select **Probability Regions** then looks at the bottom under **Construction Tools** select any tool – suggest the ***Polygon or Freehand*** since these are **Non-Auto Complete tools** for you first one. If creating additional regions adjacent to other regions and to ensure no gaps or spaces between the regions use the ***Auto-Complete tool***.

Make regions any size or shape but make sure the region boundaries are following natural or man-made features that can be followed in the field.

RIGHT CLICK: Probability Regions
SELECT: Open Attribute Table, Enter Data

*Scenario_Number, Region_Name, Area, **POC Assign**, POC (Initial), POC cumulative, Pden, POS cumulative Responsive, POScum Unresponsive, Coverage, POSTheo, Display*

Unless you have previously built scenarios the Scenario number field will not have a dropdown for selection so leave blank.

Assign POC (Initial) in Attribute Table is where you put the number from 1 – 100 for weighting (1 Least Likely and 100 Most Likely). This should be done on a consensus basis and
Region Name is Lettered – AA, BB, CC, DD, EE
If you want to import these regions into another program or to save the work of Regions:

Right click on "Probability Regions" and select "Data" >"Export"
Confirm Export: "All features"
Use the same coordinate system as: "this layer's source data"
Output feature class:
Click on the Folder
Incident Folder\Analysis\ProbabilityRegions\PR_CRSF002_YOURNAME.shp"

Once all Regions are done and the POC Assign is complete run the following

Note: make sure that ROW cannot have a Null Number – 0 is fine.

SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Planning– Select and* ***RUN: Y. Probability Updates.***
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Planning– Select and* ***RUN: B. Region to Segments***
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters– Select and* ***RUN: Update Domains***

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Editing and subdividing Segments

Un-check the Probability Regions in the table of contents.

Turn on Labels for Segments

RIGHT CLICK: Search Segments
SELECT: Properties
SELECT: LABELS Tab
CLICK: in the box *"Label features in this layer".*

Subdivide a Search Segment:

RIGHT CLICK: Search Segments
SELECT: Edit Features, Start Editing
SELECT: A segment you want to edit
SELECT: The Split Tool (cut Polygon Tool) in the Edit Toolbar

Search Segment Area Size that is appropriate is usually less than 100 acres in size and can be searched in a 4 to 6 hour time frame or appropriate for the terrain in the area.

Search Segment boundaries should following natural or man-made features that can be followed and found in the field.

The Segment was given a Segment Name of the Probability Region plus the Segment # (AA01) once you split a segment you need to update the Segment Area Name of the segment (AA01, AA02, AA03, ….) Once the Split is completed the Attribute table will appear and Edit the Area Names sequential number.
CLICK: OK

If the Attribute table does not show:

SELECT: A segment
RIGHT CLICK: Select Attribute
EDIT: Area Name so that the number is sequential AA01, AA02, AA03

Once you are satisfied that your segments are subdivided then:

SELECT: Editor in toolbar
SELECT: Save Edits
SELECT: Stop Editing

Once segments are divided you can go back and create assignments for the Segments to be searched.

SELECT: *Arctoolbox*
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters– Select and* ***RUN: Search Area Names***
OPEN: *SAR_TOOLBOX10B* ***SELECT:*** *Update Parameters– Select and* ***RUN: Update Domains***

Create Additional Assignments using the segment group.

Assignment Debrief is used to debrief a team once data is saved and track is completed

Run the Coverage Tool
Run the Probability Update tool

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Team Members and Teams are not necessarily needed:

Team Members

RIGHT CLICK: Team Members
SELECT: Edit Features, Start Editing
RIGHT CLICK: Team Members
SELECT: Open Attribute Table, Enter Data

Name, Originating_Team, Team_Callsign, Check_In, Check_Out, Skills, Body_Weight, Gear_Weight, Total_Weight, Cell_ph_Number, Emergency_Contact, Team_Name (TEAMS)

Team

RIGHT CLICK: Team
SELECT: Edit Features, Start Editing
RIGHT CLICK: Team
SELECT: Open Attribute Table, Enter Data

Team_Name, Team_Type, Leader, Radio_Call_Sign, Cellphone_Number, Description, Status, Medic

Scenarios

RIGHT CLICK: Scenarios
SELECT: Edit Features, Start Editing
RIGHT CLICK: Scenarios
SELECT: Open Attribute Table, Enter Data

Scenario Number, Description, Probability, Subject Number

** Need to add Scenario Name after Scenario Number.

Additional Considerations:

Circle Areas that can be a decision point and put in analysis folder and can use the scratch point or line.

Create a Folder for Tracks and down load track to the Folder
Tracks and Routes can be hand drawn

Run Radio Viewshed –
Cell Phone Sectors if you have Cell Phone Data

With the DEM several additional Items can be run

Run Fill – Raster
Resample – Raster – from 1 meter to 3 but no greater than 9 meters for cellsize. NLCD 30M

Run Slope Tool
Track Offset
Mobility Model
Theoretical Search Area
Dispersion Angle

The Travel Speed Hours come from theoretical Search Area.
Elevation Difference from IPP – Raster Calculation – Tools Scripts, Elevation Difference Model.

PROCESS FLOW for IGT4SAR

Team Debriefing

Go to Assignments Table and Edit the field on

Assignment Debrief Table

- Select – Assignment
- Select – Area Searched
- Input – Date/Time Completed
- Task Completed (Yes or No)
- Team Size
- Sweep Width
- GPS Location – In Team
- Debrief Notes
- Teams Opinion
- POD of Responsive Person
- POD of Unresponsive Person
- Followup Urgency

GPS Tracks –

Import GPS File

GPX

Coverage - Ok

Look in the Regions for Coverage and Search Segment should also match

Update Probability – The Table will update.

Remember that Hasty Line and Hasty Point does not update or affect POA or POD so If a GPS track is provided it will update.