QRT/Air/Search Segment to Assignments

The QRT/Air/Segment – Create Assignment tool within the IGT4SAR SARToolbox permits the user to quickly create task assignments for SAR Teams from multiple types of features typically used in SAR Operations. When executed, this tool assigns user specified features to an assignment task. In some instances, the specific language for the task is auto-generated using a combination of generic, or user provided, text with specific geographic parameters from the feature. The allowable features include: QRT_Points, QRT_Lines, QRT_Segments , Search Segments and Air Search Patterns. These features are defined below.

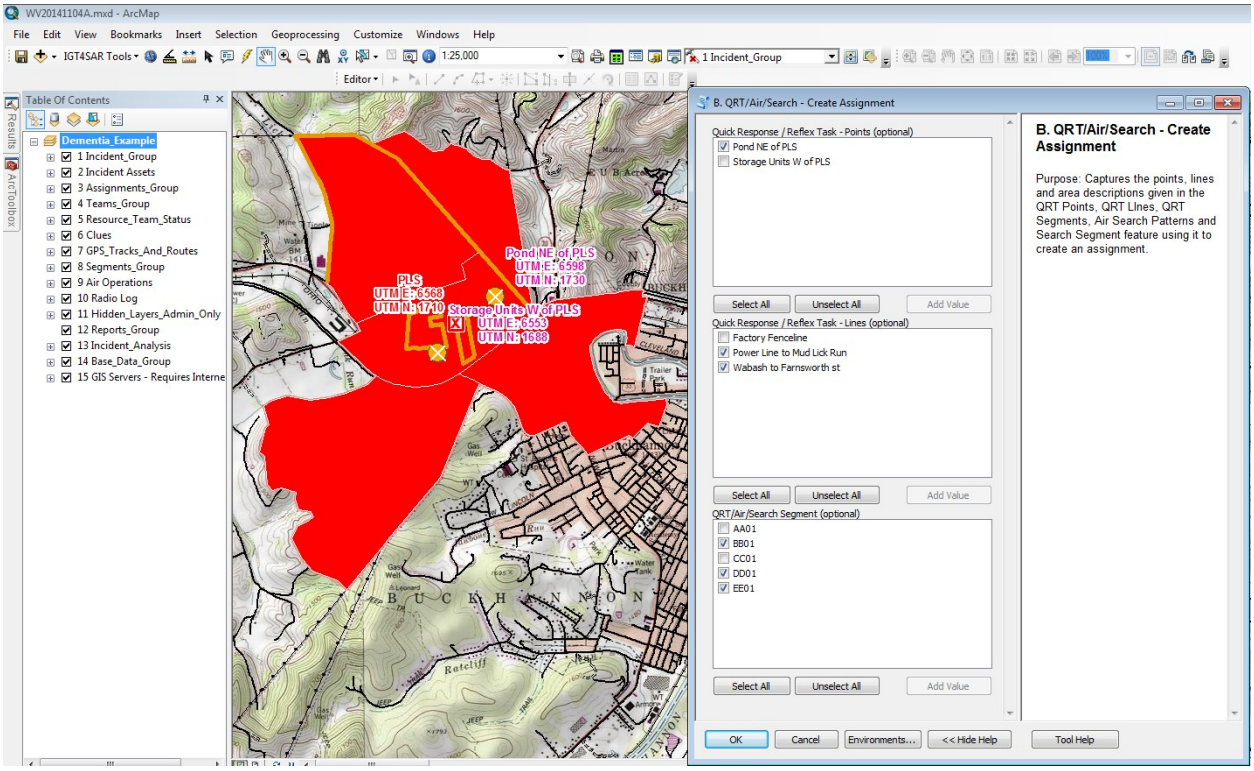

Figure 1 Screenshot from IGT4SAR/ArcGIS showing QRT Features and Search Segments. Also shown is the QRT/Air Search - Create Assignment tool dialog box (SARToolbox).

Within the SAR environment there are multiple types of assignments that are typically employed. Some of the initial tasking that is performed is referred to as Reflex Tasking or Hasty Tasking. These tasks typically occur along linear features (roads, trails, utility right of ways, etc), points features (attractants) or small areas. Tasks referred to as Reflex Tasks are often times common in nature regardless of the subject being sought. That is not to say that the same geographical locations are searched, but the types of features being search are often consistent from one search to another. For example, a common Reflex Task would be to search the trails in the immediate area of the Point Last Seen (PLS) or Last Known Point (LKP) or to search inside a residence. As the search progresses, a transition occurs as operations move beyond these "automatic" tasks to ones that are a little more deliberate. These tasks are often referred to as "Hasty Tasks" however this is a misleading title for this type of task. Although the concept behind this type of task is one of rapid deployment and execution, it is not intended to be

performed in a hasty manner. These tasks are deliberate and carefully executed to maximize the likelihood of find the subject. The premise of Hasty Tasks is to search "obvious", high probability areas first as these efforts often result in locating the missing subject. Due to the stigma of a task being labeled "Hasty" and thus perceived as being conducted in a hasty, non-strategic manner, within the context if IGT4SAR this type of task along with Reflex Tasks is renamed as "Quick Response Task" (QRT). QRT's may consist of a Point, Line or Area feature and titled "QRT_Points", QRT_Lines and QRT_Segemtns, respectively.

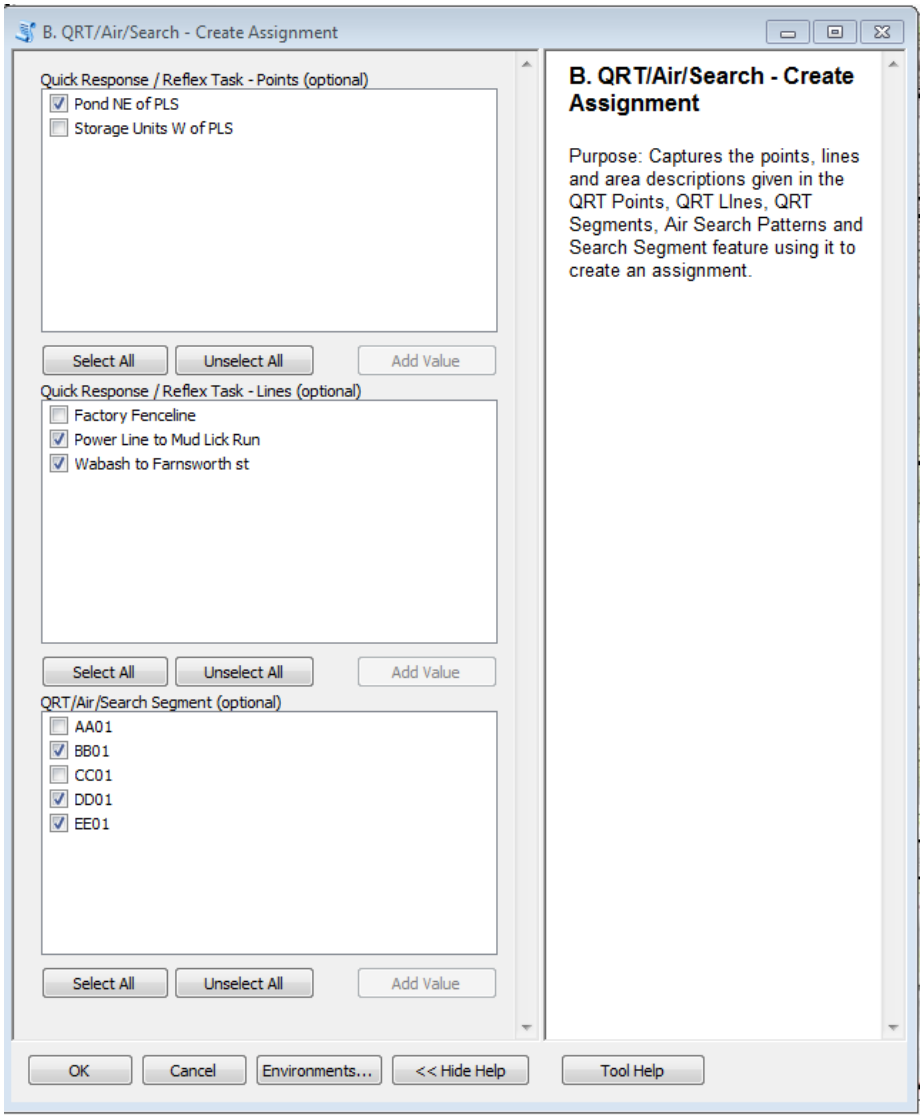

Figure 2: QRT/Air/Search – Create Assignment dialog box

One of the distinct advantages of using GIS for creating assignments is the ability to re-use features and track the activities occurring within each feature. This is common in Search and Rescue as prominent locations, linear features and segmented areas are often times assigned to field teams for searching. This is even more relevant for Search Segments where tracking Probability of Area, Probability of Detection and Probability of Success are important. Having defined features and re-using those features

for future assignments also reduces the amount of time needed in defining new features for each new assignment. More importantly, within a GIS, the user is able to take advantage of the database relationships to quickly query all of the activities that have occurred within a particular feature.

When initiating the QRT/Air/Search – Create Assignment tool, the user is provided a list of available features from each class of feature (Points, Lines and Polygons or Areas). The user may elect to "Select All", none or any number of the features from each class. When the tool is executed an assignment for each feature is created in the "Assignments" Table (3 Assignment Group / Assignments). The "Assignment" is not actually a geographic feature but refers to the geographic features (QRT, Air and Search features) which are recorded in the Table. This allows the feature to be re-used any number of times as the operation continues. Once a feature has been assigned, the user can then edited the individual assignments to provide additional information. Note that the QRT/Air/Search-Create Assignment tool does not have to be used in order to create a task assignment. When a new search feature (QRT/Air/Search) or collection of features have been created, the user can run the "Search Area Name" domain update tool. Running this tool will provide the user with a dropdown list of features to choose from when creating an assignment. However, the "QRT/Air/Search-Create Assignment" tool automates much of the necessary steps in creating an assignment.

Assignments

Area_Name	Area Previously Searched	Description
Pond NE of PLS	No	Search in / around Pond NE of PLS located at: 565980 4317308.
Storage Units W of PLS	No	Search in / around Storage Units W of PLS located at: 565538 4316879.
Factory Fenceline	No	Search along Factory Fenceline for a distance of 0.84 miles between point 1: 565489 4317096, and point2: 565489 4317096. Sweep 10 - 20 ft on each side of road/trail. Look for decision points and location where someone may leave the trail.
Power Line to Mud Lick Run	No	Search along Power Line to Mud Lick Run for a distance of 2.2 miles between point 1: 566261 4317197, and point2: 564700 4317412. Sweep 10 - 20 ft on each side of road/trail. Look for decision points and location where someone may leave the trail.
Wabash to Farnsworth st	No	Search along Wabash to Farnsworth st for a distance of 0.52 miles between point 1: 565659 4317191, and point2: 565757 4317204. Sweep 10 - 20 ft on each side of road/trail. Look for decision points and location where someone may leave the trail.
AA01	No	The area is bounded by the treeline to the north from the E corner at pt AA01-A (6551 1736) and the w corner at AA01-B (6452 1710). Point AA01-B also intersects with Old Weston Rd. The SW border is US Rt 119/33 which continues to form the S border to its intersection with Old Weston Rd at the SE corner of the Segment.
AA02	No	This area is bounded by a treeline to the N starting from the NW corner at pt AA01-A (6551 1736) directly E to the intersection with the Powerline Right of Way. The Powerline runs SE to NW and forms the E border of the region. The S border is US Rt 119/33 extending the SW corner at the intersection of Rt119/33 and Old Weston Rd. W border extends to the N from this location along Leggit/Cohart rd back to the treeline at AA01-A.
BB01	No	<Null>
CC01	No	This area is bounded by Powerline right of way to the E from pt CC01-D (6585 1764) to pt CC01-A (6539 1816). At CC01-A the N-NW border is the ridge top that extends to pt CC01-B (6516 1762) and continues S to pt CC01-C (6514 1720) at the treeline with the treeline being the S border to its intersection with the powerline at CC01-D.
		This area is bounded to the N and NE by the powerline right of way from pt CC01-A (6539 1816) and extending

1 (0 out of 11 Selected)

Assignments

Figure 3 Area Names and Task Description from the Assignments Table as a result of running the QRT/Air/Search-Create Assignments Tool (SARToolbox).

The fields populated in the Assignments Table as a result of running this tool are dependent on the type of feature being assigned. In the case of QRT_Points and QRT_Lines, the text that appears in the "Description" field of the Assignment is a combination of task specific text along with geographical information relevant to the type of feature. For example, the task of searching a small region that can be defined by a QRT_Point is fairly common regardless of the particular point. While there may be some specific instruction that is relevant for a specific location the basic tasks remains consist:

"Search in/around the point which is at the following location"

This is the basic language that is used in generating a QRT_Point feature task however; in addition to the generic language some specific information about the point feature (Name and coordinates) is also provided. Once the basic task is created using the QRT/Air/Search – Create Assignment Tool (SARToolbox) the user may elect to add some additional information in the task Description or populate additional fields such as the Safety Message, etc. Similarly searching along linear feature such as a road or trail is also fairly consistent regardless of the specific feature and thus QRT_Lines also has generic text that is used to speed up the task writing effort. QRT_Lines use the following as baseline text for the task assignment:

"Search along **AREA_NAME** for a distance of ***LINE LENGTH*** between points ***START COORIDNATES***, and ***ENDING COODINATES***. Sweep 10-20 ft on each side of road/trail. Look for decision points and locations where someone may leave the trail."

In the case of the QRT_Segments, Air Search Patterns and Search_Segments, if an Area_Description is provided in the feature attribute table for each segment then it is copied into the Assignment Description. The user may of course add any additional text to the Task Description as needed. In this manner, the user doesn't need to re-write the task description for each new task if the same feature is used for multiple tasks.

The QRT/Air/Search-Create Assignment tool (SARToolbox) also populates the Map Scale field in Assignments with a standard 1:24000 scale (the default scale for Air Search Pattern is 1:72000 - these default values can be changed by the user in the script if desired), indicates that a map and GPX file are to be generated when the task assignment is created, sets the Priority to "HIGH" (can be changed by the user) and copies the Operational Period Safety Message (1 Incident_Group/Operation_Period). The tool will also review the previously assigned tasks and if a feature is being used again the "Previously Search" field in the new assignment will be changed to "YES". For any "Search_Segment" that is assigned, the STATUS field will be changed to PLANNED which will subsequently alter the symbology (if the default symbology is being used).

Error messages are provided to assist the user with executing this tool.