



*DMC PPS CuePac
User Guide Version 2017.1
5 May 2017*

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ISV/Software Solutions

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Please contact us via phone or email for assistance with or comments about GeoCue and DMC PPS CuePac.

email:

support@geocue.com

Phone:

1-256-461-8289

Just ask for GeoCue Support and you will get connected with someone who can assist you. There is usually someone in the office between the hours of 0600 and 1800 CDT, USA on weekdays. Weekends are sort of hit or miss.

Fax (always on):

1-256-461-8249

About this Document

Welcome to the DMC PPS CuePac Version 2017.1 User Guide. This guide provides background on using GeoCue to manage Intergraph's Digital Mapping Camera (DMC) Post-Processing System (PPS) in a GeoCue managed workflow. This workflow may include from 1 to n nodes for PPS processing.

If you are using distributed processing, you may want to refer to the GeoCue Command Dispatch System Administrator's Guide for configuring your system.

The reader of this document is expected to be familiar with the basic GeoCue processing system. For information on GeoCue itself, please refer to the GeoCue User Guide.

Contents

1	Introduction.....	1-1
2	Project Creation	2-1
3	Import ISPM Project.....	3-1
3.1	Import of Additional Missions.....	3-1
4	PPS Initialization	4-1
4.1	PPS Database Creation	4-1
4.2	Set GeoCue Processing Parameters	4-5
4.3	Modify DMC PPS Database	4-7
5	Radiometric and Geometric Processing.....	5-1
5.1	GeoCue Command Dispatch System Configuration	5-1
5.2	Processing	5-1
6	Adjusting Processing Parameters.....	6-6
6.1	Run Image Analysis.....	6-6
6.2	Set DIA LUT.....	6-9
6.2.1	Using LUT Groups from other GeoCue Projects	6-11
7	Individual Image QC.....	7-1
7.1	Quick Check QC.....	7-1
7.2	Checklist Driven Image Set QC.....	7-5
8	Miscellaneous Operations.....	8-1
8.1	Set PPS Processing Parameters.....	8-1
8.2	Delete Intermediate Images	8-1
8.3	Export ISPM Project.....	8-1
9	GeoCue Option Settings	9-3
10	Concluding Remarks.....	10-1
11	Acronyms.....	11-1

1 Introduction

GeoCue® has teamed with Intergraph Corporation to develop a high performance distributed processing workflow for the Digital Mapping Camera Post-Processing System (DMC PPS or PPS). This workflow provides:

- Graphical view of the project area, including context such as raster and vector backdrops
- Importing of Intergraph’s ImageStation Photogrammetric Manager (ISPM) projects
- Setup of the DMC post-processing database
- Use of GeoCue’s distributed processing system to drive DMC radiometric and geometric processing across multiple servers in machine or cluster mode
- Integration of Intergraph’s DMC Image Analysis™ software and management of the resulting look-up tables
- Integration of an image QC step, using Intergraph’s RasView™ application
- Creation of “on-the-fly” ISPM projects for easy integration into downstream processing tools
- Seamless integration with other GeoCue CuePacs® for workflows such as orthorectification and integration with LIDAR projects
- Integration into GeoCue Project Portal, Project Dashboard and Distributed Project Management System for web monitoring and multi-contractor projects

The DMC PPS CuePac integrates into the Enterprise version of GeoCue. It is assumed that the reader of this document is familiar with basic GeoCue operations and that their distributed processing system has been configured (see the GeoCue Command Dispatch System Administrator Guide).

NOTE: We recommend that Cluster mode processing be used in the GeoCue Command Dispatch System for DMC PPS processing.

NOTE: You will need the DMC Workflow Sample dataset to complete these exercises. You can either ship a USB drive with return postage prepaid to GeoCue to obtain this set or purchase the data set on a 32 GB flash drive from GeoCue for \$100 US. If you elect the flash drive option, the drive is yours to keep.
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2 Project Creation

The first step in the DMC PPS workflow is the creation of a GeoCue project. This involves:

- Naming the project
- Defining the Environment (the Workflow)
- Defining the Coordinate System

From the main GeoCue Client menu, select: **Setup ► Project ► New**. This will invoke the dialog of Figure 2-1.

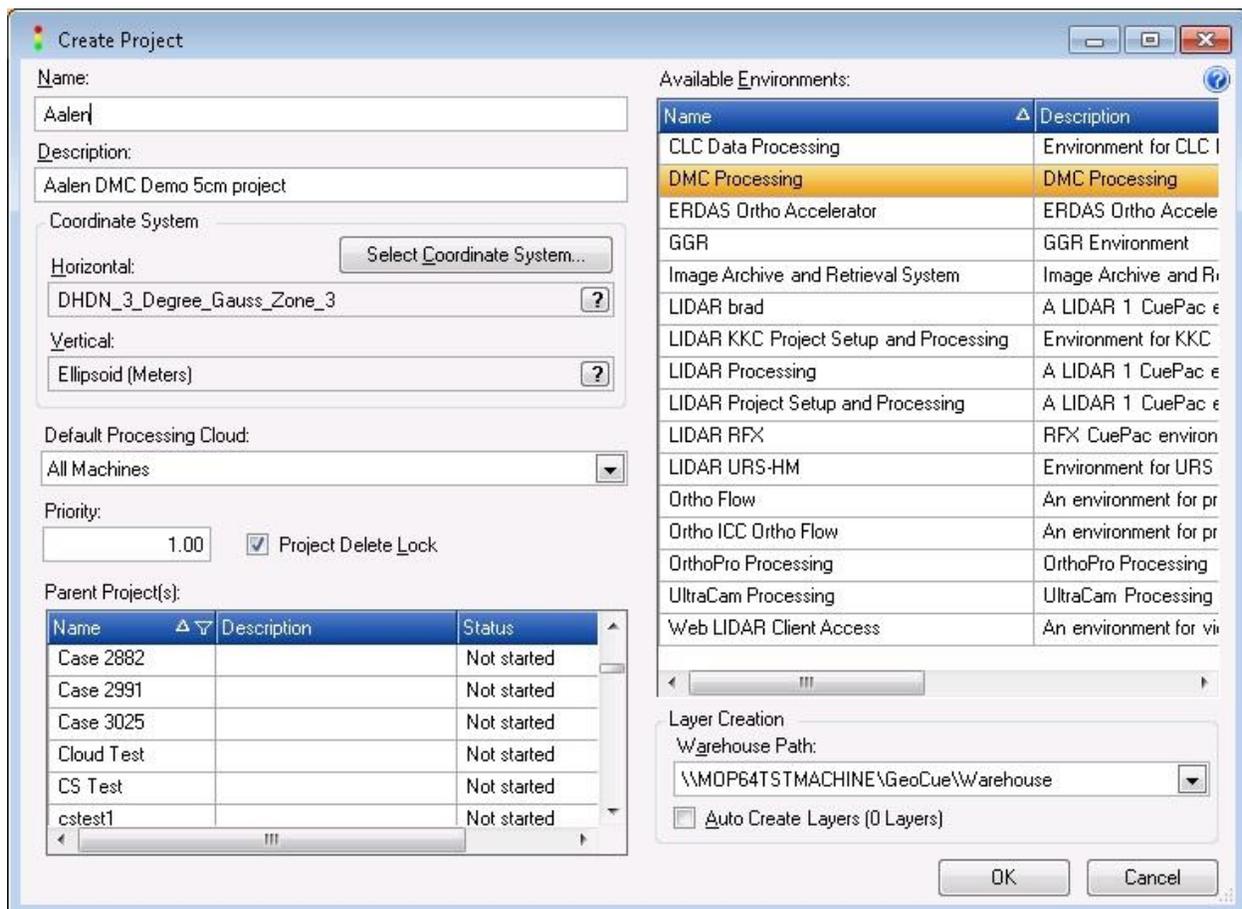


Figure 2-1: New Project dialog

In the ‘Create Project’ dialog, enter a project name and optionally a description. For this demo, we’ll use “Aalen” as the project name. Under the Available Environments list, select “DMC Processing.” Accept the default values of Default Processing Cloud as All Machines and Priority as 1.0.

Note that the sample data set contains an ISPM project entitled “Aa_5cm”. This is the project that we will use in this sample workflow.

Click the **Select Coordinate System...** button. This will invoke the dialog of Figure 2-2. Select the coordinate system that corresponds to the input data. For the “Aa_5cm” ISPM project, chose the ‘Predefined Horizontal System’ and then browse the Coordinate System Tree via the following path: Project Coordinate Systems > National Grids > DHDN 3 Degree Gauss Zone 3. For the vertical system, choose “Ellipsoid (Meters)”.

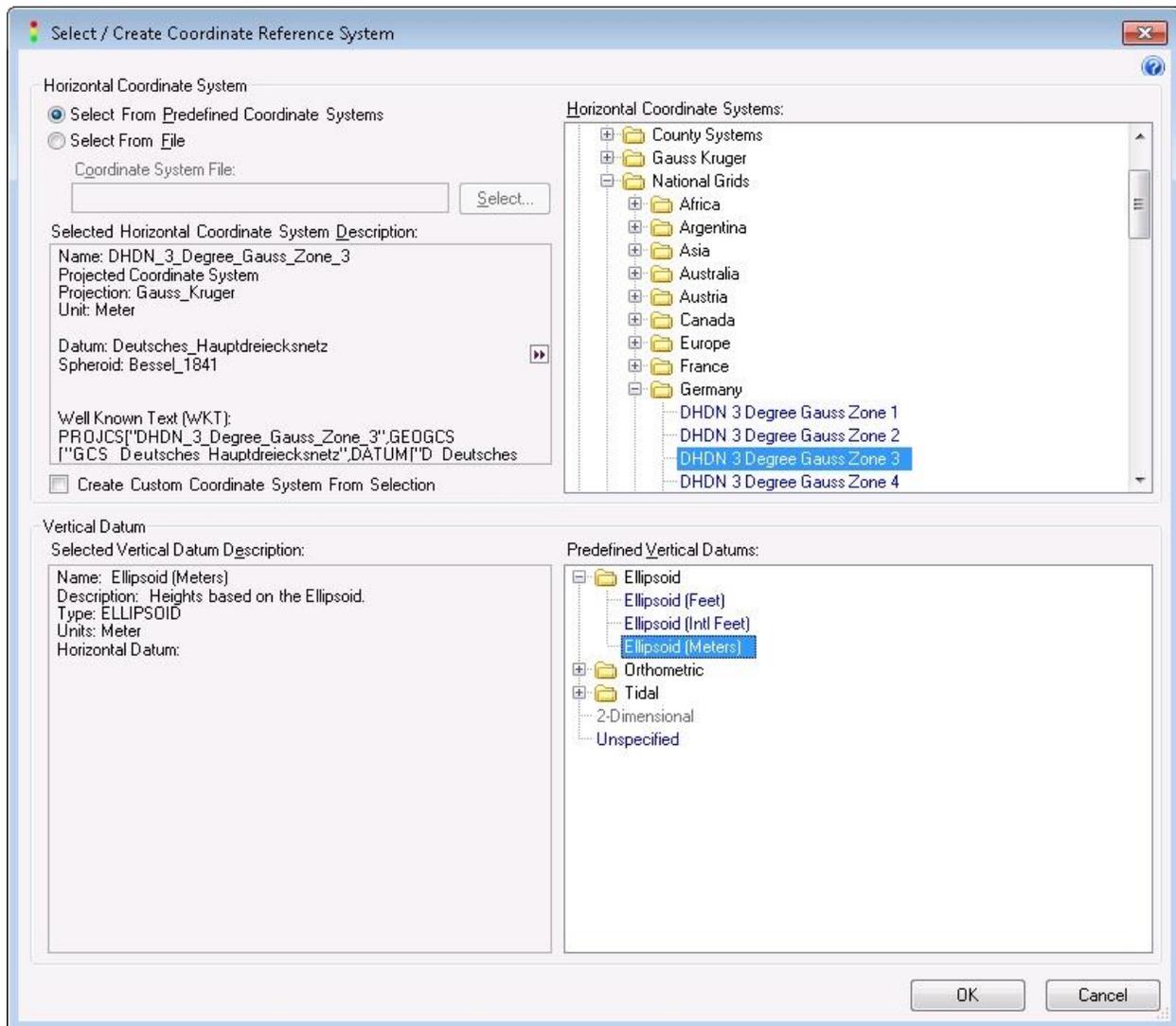


Figure 2-2: Select Coordinate System dialog

Project Delete Lock is just a ‘safety’ to keep you from deleting the project accidentally. If you check it, you add an extra step in the process required to delete a project.

Click ‘OK’. The GeoCue Table of Contents (TOC), in the upper left pane, will now show a new layer, named ‘Aalen’. The coordinate system of this layer is the default for the creation of other layers in the project. For the DMC Processing environment, this layer will not have any displayable objects (we call these “entities”).

3 Import ISPM Project

After creating a project, the first step in processing is to import an ISPM project. This project was typically produced as the output of Z/I Mission Planning.

From the GeoCue menu bar, select **Sources ► Import ISPM Project**. This will invoke the dialog of Figure 3-1.

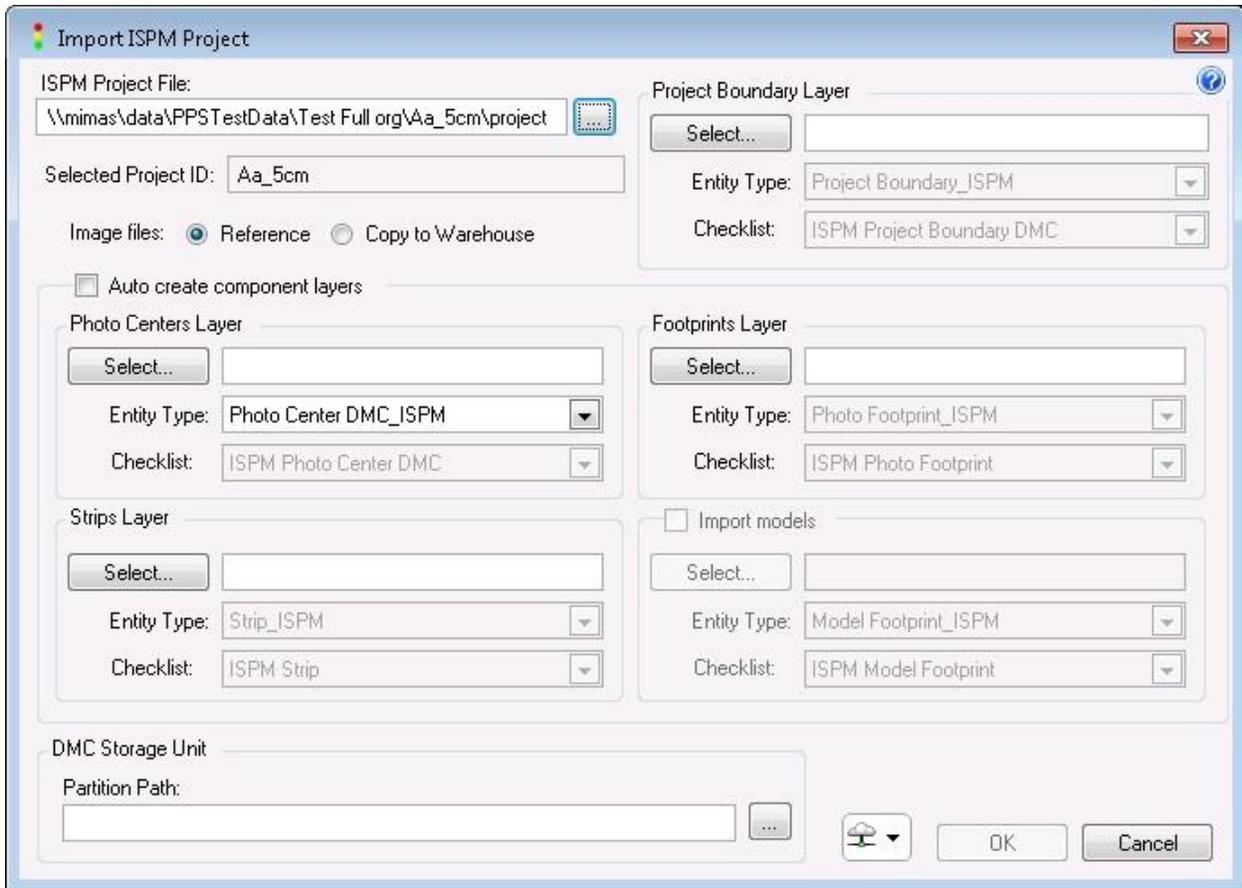


Figure 3-1: Import ISPM Project dialog

On the dialog that appears, click the browse button (top-center) and browse to an ISPM project created by ZI Mission. The ISPM project name will appear in the ‘Selected Project ID’ box. For our example, this project is entitled: ‘Aa_5cm’.

Click the ‘Reference’ radio-button. The ‘Reference’ selection for ‘Image files’ will cause GeoCue to simply reference paths for any image files that may already exist in the ISPM project. Alternatively, ‘Copy to Warehouse’ can be used to have GeoCue copy any existing image files in the project into the GeoCue warehouse that is associated with the ISPM project layer. For a DMC processing flow, there will not usually be any existing image files.

A DMC ISPM project is represented in GeoCue by four layers:

- Project Boundary – This layer will contain a Minimum Bounding Rectangle (MBR) representing the extent of photos in the project.
- Photo Centers – This layer will contain point graphics for each photo (exposure station) in the project. These are the GeoCue *entities* that contain processing steps.
- Strips – This layer will contain line graphics, one for each flight line in the project.
- Footprints – This layer will contain a rectangular graphic that represents the ground footprint for each photo.

The first ‘Select’ button on the Import dialog opens the layer Selection dialog for the Project Boundary layer. If no Project Boundary layers exist, the Create Layer dialog (Figure 3-2) is immediately displayed. Enter a name, such as “ISPM Boundaries” and (optionally) a description. The coordinate system should be the same as that used for the project. This is the default value used by Create Layer (unless you have intentionally changed the default coordinate system using the TOC tools).

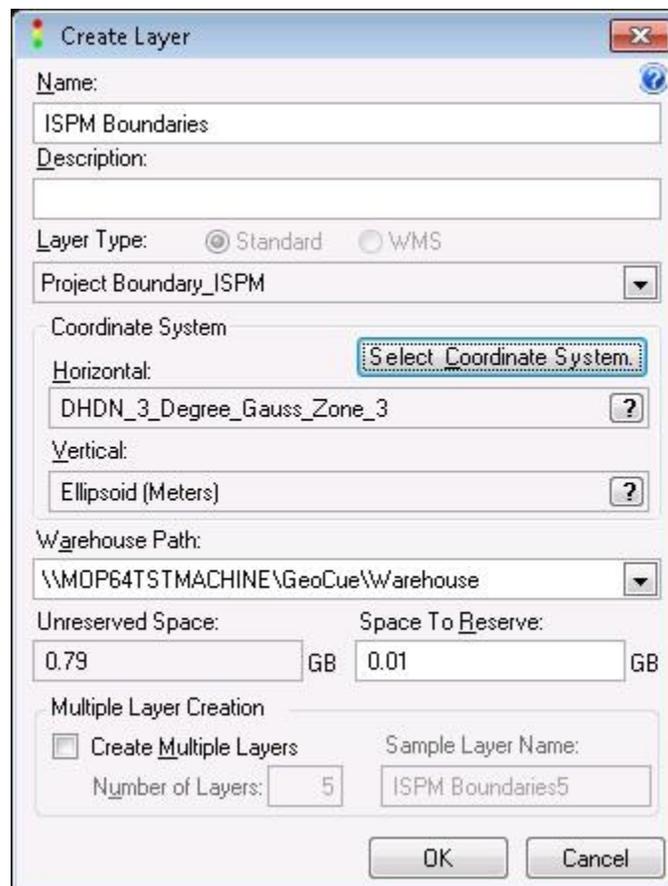


Figure 3-2: The Create Layer dialog

The remaining layers can be created automatically. To do so, check the ‘Auto create component layers’ checkbox. The layer names to be created are displayed, and will be prefixed with the ISPM project name. In the initial release, only the Photo Centers entity type is selectable. For the DMC workflow ‘Photo Center DMC_ISPM’ must be selected. The other choice, Photo Center_ISPM is used for general, non-DMC, ISPM project import.

Finally, browse to a DMC storage unit partition that contains data for this project. Browse to the folder containing the mission folder(s). This is the same folder location as would be browsed when using the Intergraph ‘Storage Units and Camera Settings’ dialog.

The dialog as shown in Figure 3-3 is set up and ready to import a project named “Aa_5cm”. Photo Centers, Strips, and Footprints layers will be automatically created and named as indicated.

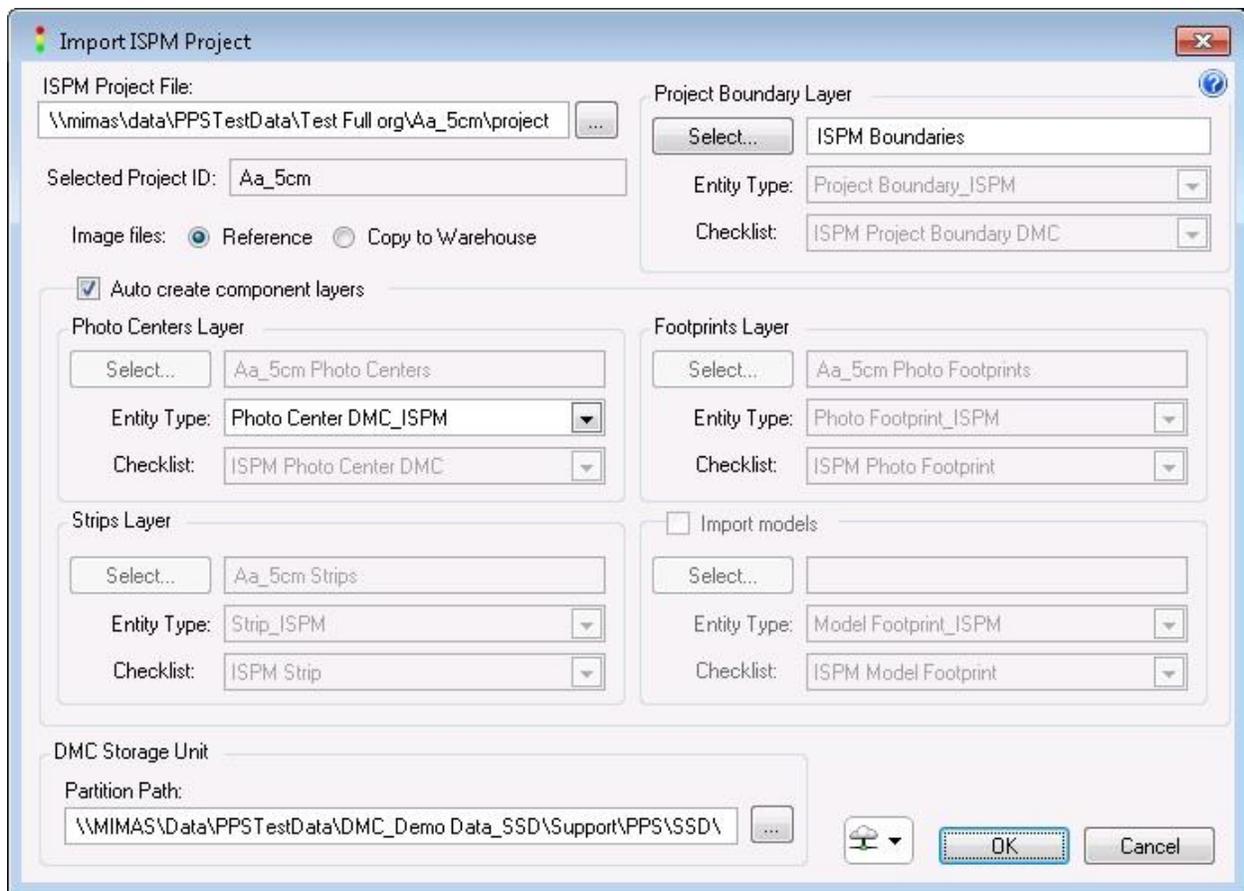


Figure 3-3: The Import ISPM Project dialog properly prepared for the example project

Click ‘OK’ to begin the project import. The dialog will disappear and the indicated layers will display in the GeoCue TOC (Figure 3-4).



Figure 3-4: The GeoCue Table of Contents (TOC) showing the newly created layers

Note that while the project is importing, the back-color of the Visible toggle for the Strips layer will appear blue, which represents the GeoCue “in-progress” color. When the import completes, the color will change to green, indicating a successful import. If the back-color should change to red, an import error has occurred. In this event, double click the layer to view the Layer Properties dialog. Select the **Processing** tab to view any errors that may have occurred (Figure 3-5).

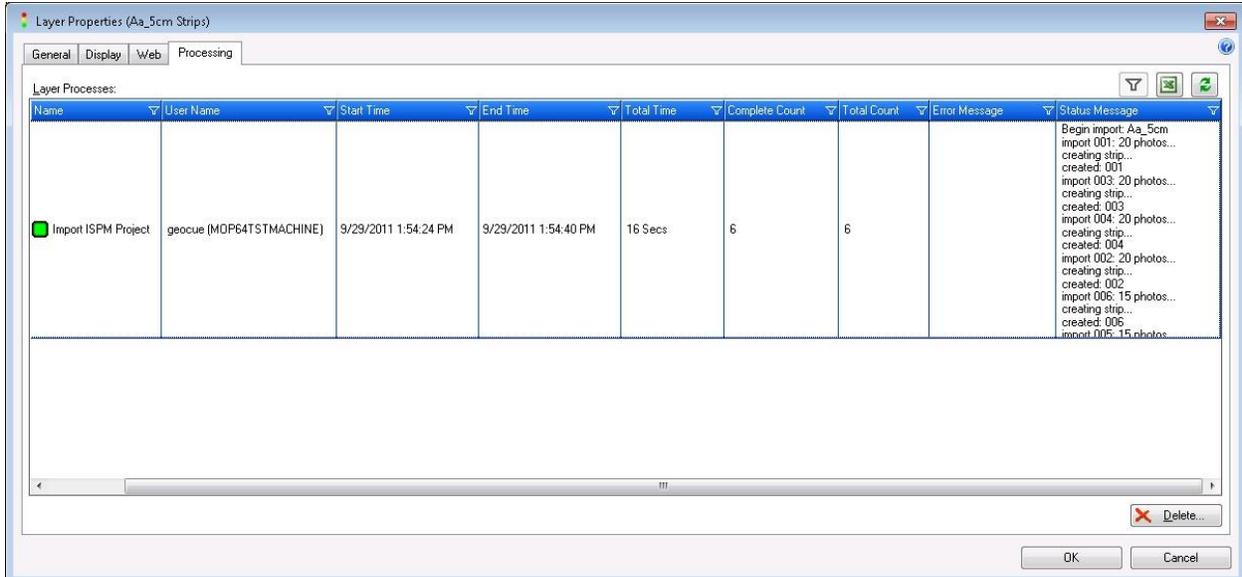


Figure 3-5: Error message section of the Layer Properties dialog

If this is the first graphics to be introduced into the project, you will need to **fit** the Map View to see the result (the globe icon in the main Map View toolbar). Fitting the Map View for the example project will result in the display of Figure 3-6. **Select** the Project Boundary in the Map View and observe the *properties* in the Property pane and the checklist in the Checklist pane.

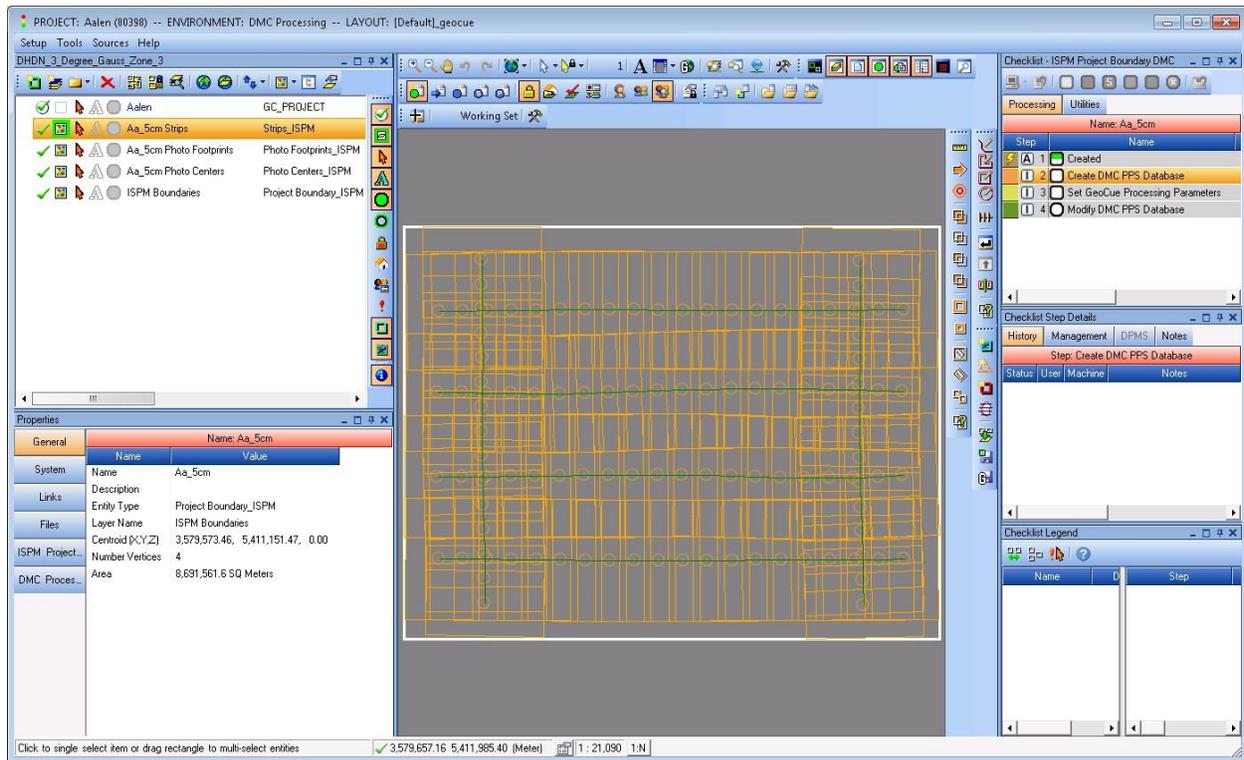


Figure 3-6: The example ISPM project in the Map View

Properties on the Project Boundary include:

- Attributes:
 - ProjectID,
 - Original Path,
 - Flying Height,
 - Average Elevation
 - Linear Units
 - Angular Units.
- Files:
 - GeoCue warehouse path to which the ISPM project files were copied.

The checklist for a boundary is shown in the upper-right pane. The steps will be discussed below.

Figure 3-7 shows a more detailed view of the upper left of the Map View.

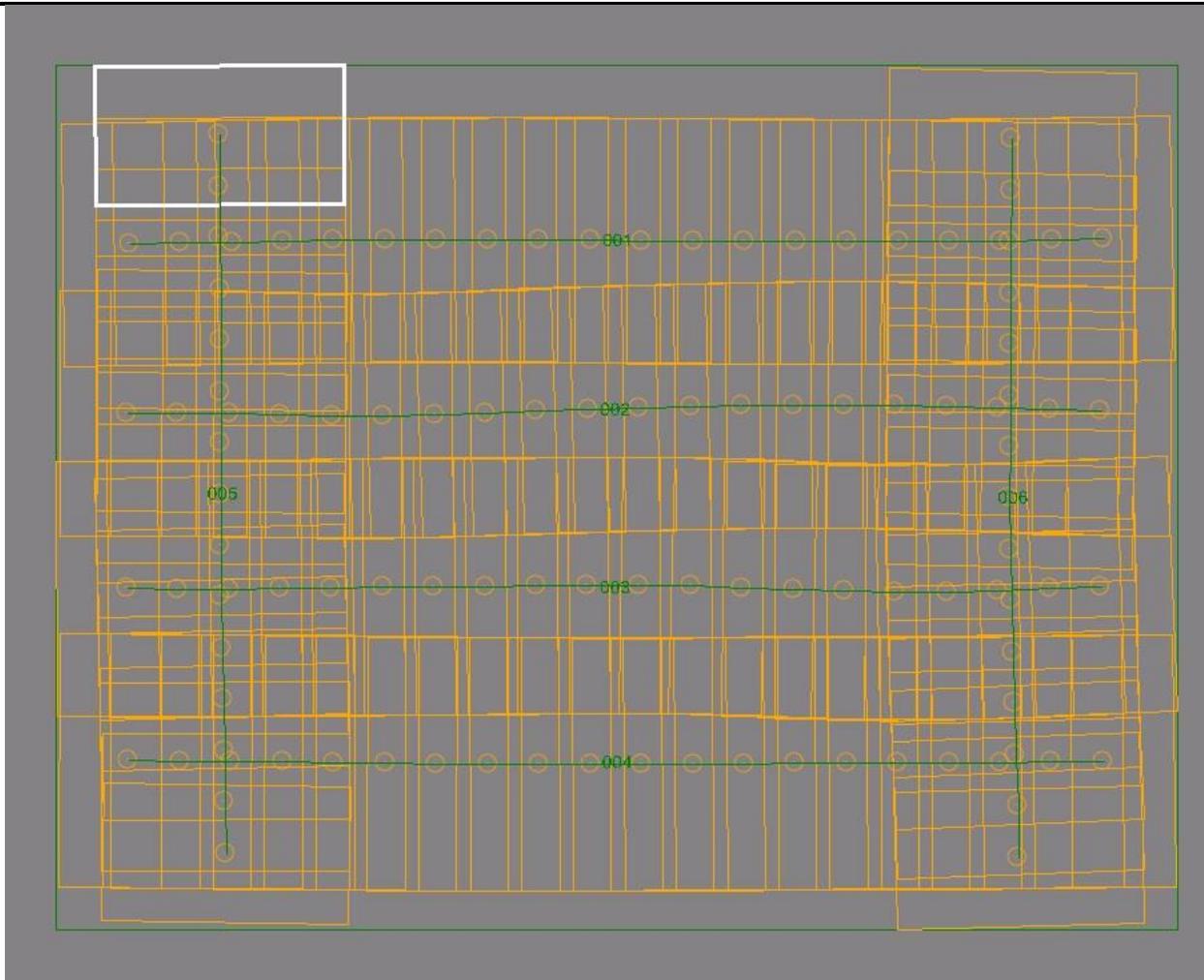


Figure 3-7: Detailed view of the upper left area of the project

A photo footprint has been selected. At the center of each footprint is a photo center graphic (small circle). The green lines represent flight lines; labels turned on (001-006). Strip attributes are: ISPM Project ID and ZI Mission name. There are no active checklist steps associated with Flight Lines or Photo Footprints.

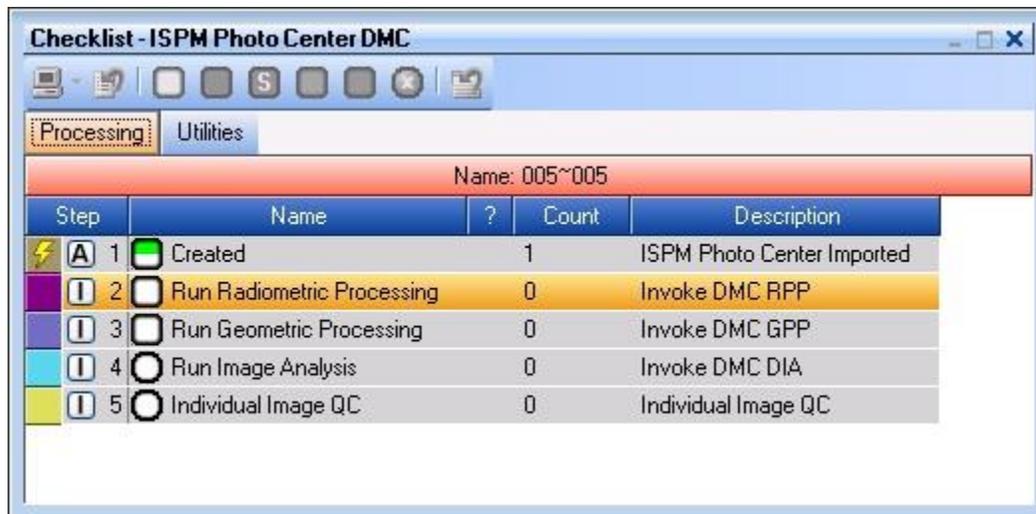
Footprint graphics do not have attributes or checklists. They simply show the extent of coverage of the photos. All photo processing is initiated from the Photo Center entities' checklists, as described below. Footprints are useful for checking for coverage or gaps, but usually should have their visibility set to 'Off', as they make the Map View too cluttered. Toggle the 'Visible' icon on the footprint layer in the TOC to hide the display of footprints.

Photo Center entities are named using the ISPM Photo ID from the ISPM project. Strip ID is available from the attributes, or by using the labels on the strip graphics in the Map View. The default attributes and checklists are shown in Figure 3-8 and Figure 3-9.



Attributes			
Name: 005~005			
	Name	Value	Description
Links	Camera	DMC	Camera
	StripID	005	Strip ID
Files	ZIMission	Aa_5cm	ZI Mission
	LUTGroup		DIA LUT Group Name
ISPM Photo...	X	3578387.80204796	X
DMC Produc...	Y	5411621.52240148	Y
	Z	969.7	Z
	Omega	0	Omega
	Phi	0	Phi
	Kappa	89.3437820049247	Kappa
	GivenX	3578387.80204796	Given X
	GivenY	5411621.52240148	Given Y
	GivenZ	969.7	Given Z
	GivenOmega	0	Given Omega
	GivenPhi	0	Given Phi
	GivenKappa	89.3437820049247	Given Kappa
	ThumbnailID	0004172_112120071227370001859106.bmp	Thumbnail ID
	AcqSrc	DMC=Aa_5cmM10_2007-11-21_12-26_766510180010	Acquisition Source tag
	CameraType	DMC	Camera Type
	PhotoID	005	Photo ID

Figure 3-8: Photo Center Attributes



Checklist - ISPM Photo Center DMC					
Name: 005~005					
Step	Name	?	Count	Description	
1	Created	<input checked="" type="checkbox"/>	1	ISPM Photo Center Imported	
2	Run Radiometric Processing	<input type="checkbox"/>	0	Invoke DMC RPP	
3	Run Geometric Processing	<input type="checkbox"/>	0	Invoke DMC GPP	
4	Run Image Analysis	<input type="checkbox"/>	0	Invoke DMC DIA	
5	Individual Image QC	<input type="checkbox"/>	0	Individual Image QC	

Figure 3-9: Photo Center processing checklist

3.1 Import of Additional Missions

Multiple missions, as will occur with multiple days of flying over the same project area, may be imported and processed in a single GeoCue project. Since ISPM projects may include photos not yet collected, and/or photos collected previously, the Import ISPM module follows these rules when importing photos:

- 1) Photos without acquisition source tags are not imported.
- 2) Photos without corresponding raw image data are not imported.
- 3) Photos already in the GeoCue project with the same acquisition source tags are not re-imported.

Note however that it is possible to import all photos in an ISPM project by selecting the entity type 'Photo Center_ISPM'. In this case, the three rules identified above are not applied. While these particular photo entities *cannot* be used to drive DMC post-processing, this could be useful for viewing planned photos over a project area that will require several flights to complete. As collection proceeds, the updated ISPM projects may be imported to separate layers for processing.

4 PPS Initialization

This chapter describes the steps used in initializing the Post-Processing System.

4.1 PPS Database Creation

Once the ISPM project is imported, the first checklist step to be executed is on the Project Boundary. Select the Project Boundary and use the '+' tool on the Working Set toolbar to add the boundary to the 'Working Set'. When selected, the boundary will be highlighted in white; once in the Working Set, the boundary changes to yellow.

About the Working Set: Selecting an entity in GeoCue allows you to see its properties and checklist in the properties and checklist panes (lower-left and upper-right, respectively). However, to execute a checklist step, you must add an entity or group of entities to the Working Set. The Working Set is the mechanism that allows multi-user access to a project, preventing two or more users from executing commands on the same data at the same time.

When an entity or entities are in the Working Set, the title bar of the checklist pane changes color from red to green and one or more icons at the top of the checklist become active. The most common is the 'Set State In Progress' icon – the small square blue icon. With the 'Create DMC PPS Database' step highlighted, click this icon (Figure 4-1).

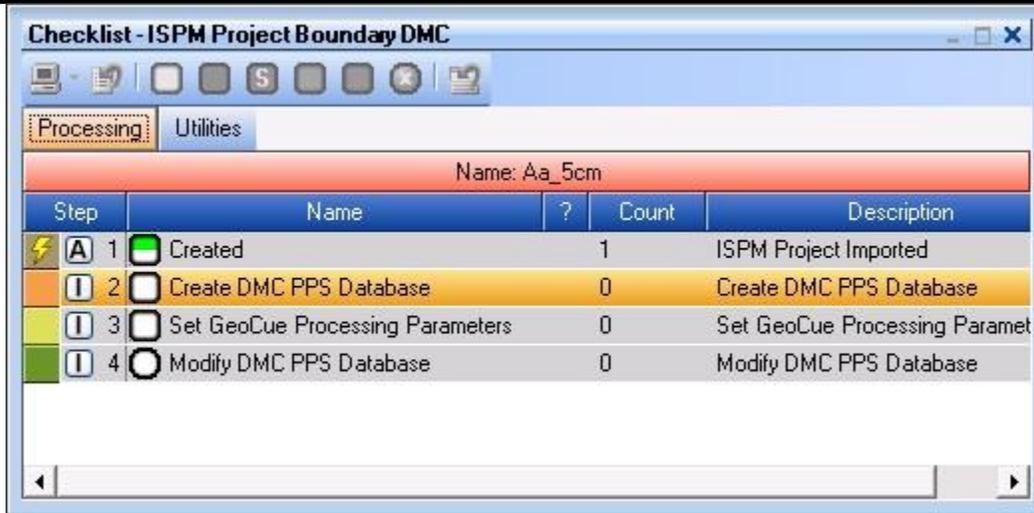


Figure 4-1: The Project Boundary entity in the GeoCue Working Set

This results in the Intergraph DMC PPS dialog being invoked which, for a new project, automatically invokes the ‘Storage Units and Camera Settings’ dialog of Figure 4-2. Using the Browse button at the upper right of the dialog, browse to the Flight Data Storage (FDS) location and calibration folder. This is usually under the directory “SSD”. Under SSD, select one of the active partitions. Do not select the actual project name.

Next browse to the Calibration folder using the browse button next to the Calibration Directory section of the dialog. For our example, this directory is called “DMC01-110”.

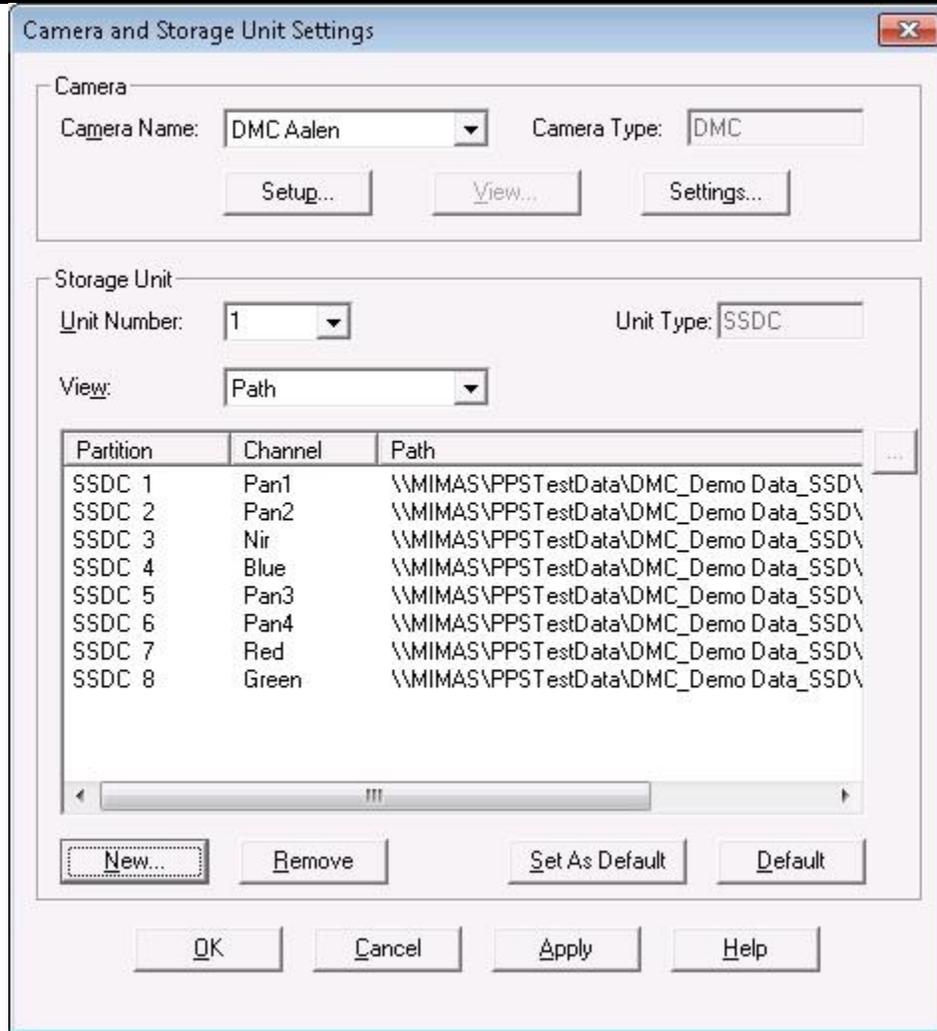


Figure 4-2: DMC PPS Storage Units and Camera Settings dialog

Click 'OK.' A new PPS database is constructed from the ISPM project and the FSD data. Following this setting, the main PPS dialog is displayed (Figure 4-3).

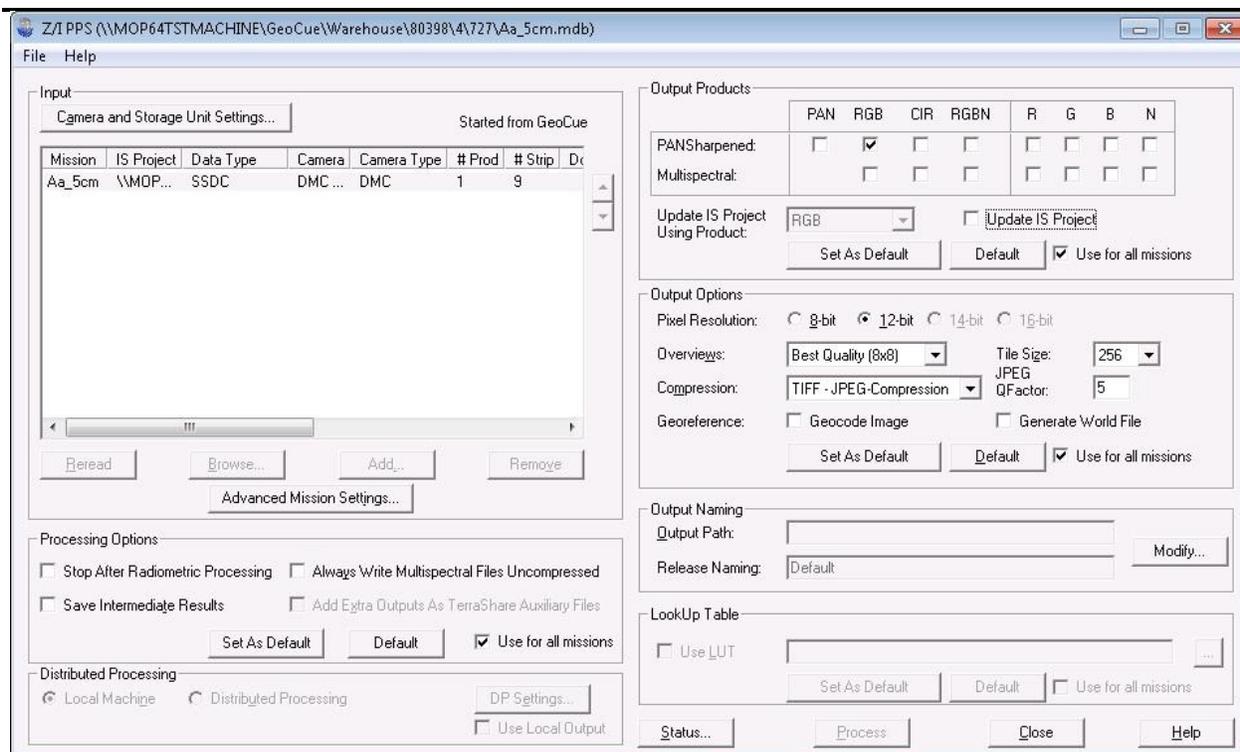


Figure 4-3: The main DMC PPS dialog

Set the Output Products and Output Options as desired¹ and click ‘Close’. Note that the dialog can be launched again when needed at other points in the workflow (Section 10: Modify DMC PPS Database checklist step).

Note that if you intend to process intermediate images to a local drive (recommended), the ‘Save Intermediate Results’ checkbox should typically be *unchecked*. See 4.2 Set GeoCue Processing Parameters below, for additional details.

Once the dialog is closed, the newly created PPS database is added to the files collection of the Project Boundary. Its path, along with the ISPM project path, is visible from the files tab of the GeoCue Properties pane of the Project Boundary (see Figure 4-4).

¹ See the Intergraph PPS reference documents for details on these settings.

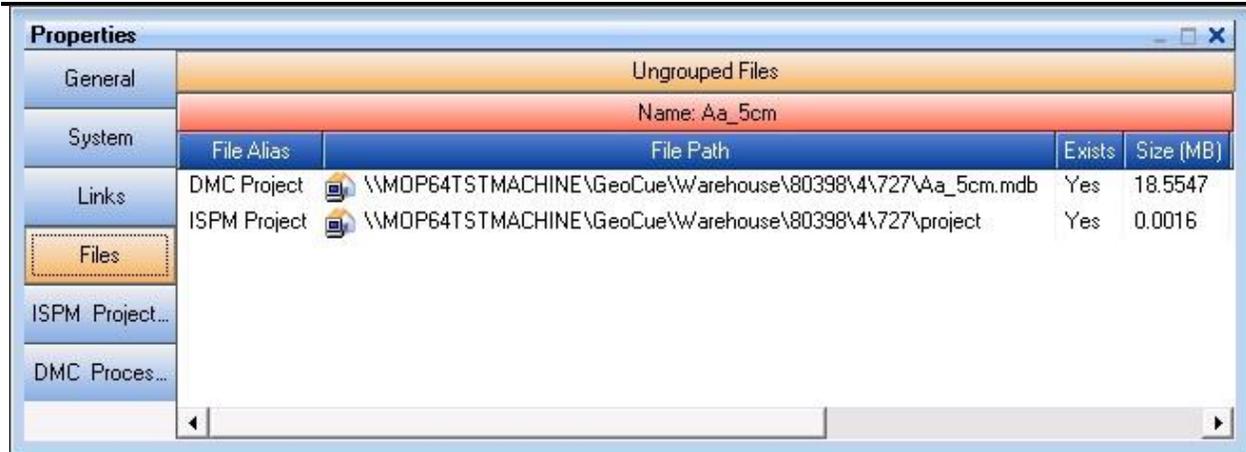


Figure 4-4: File paths after setting up the DMC PPS database

4.2 Set GeoCue Processing Parameters

Add the Project Boundary to the Working Set. Note - if you’ve just completed the previous step, you can use the ‘Restore to Working Set’ tool on the Checklist Processing toolbar to do this (curly blue arrow at top right of the checklist pane). Select the “Set GeoCue Processing Parameters” checklist step and click the ‘In Progress’ icon (blue) to start the step.

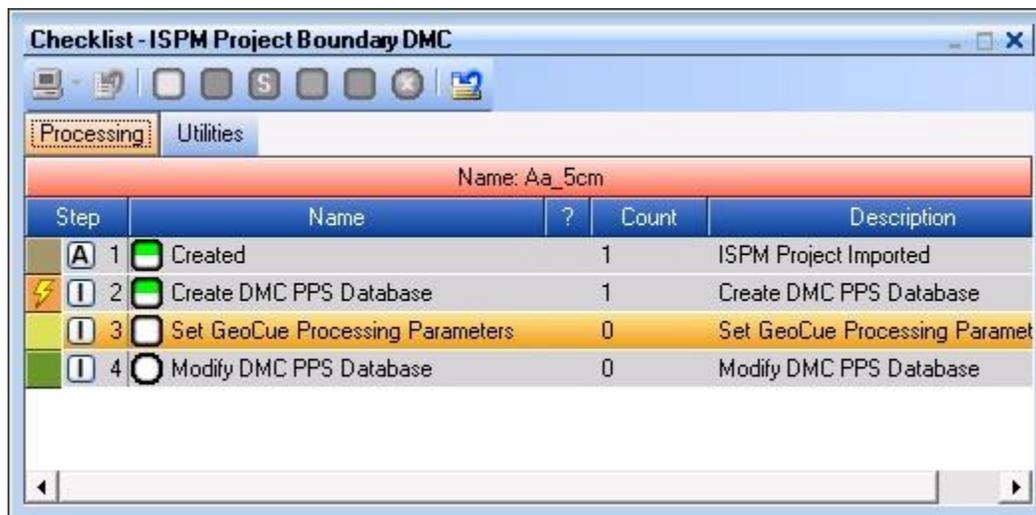


Figure 4-5: Project Boundary Checklist with the Set GeoCue Processing Parameters step selected

A dialog appears (Figure 4-6) to allow selection of several GeoCue processing options. First, the warehouse to be used for storage of the intermediate image files can be selected. The dialog box simply lists all available warehouse locations². Select the desired warehouse and click OK.

² GeoCue Warehouses are set up using the GeoCue Server Database Manager tools.

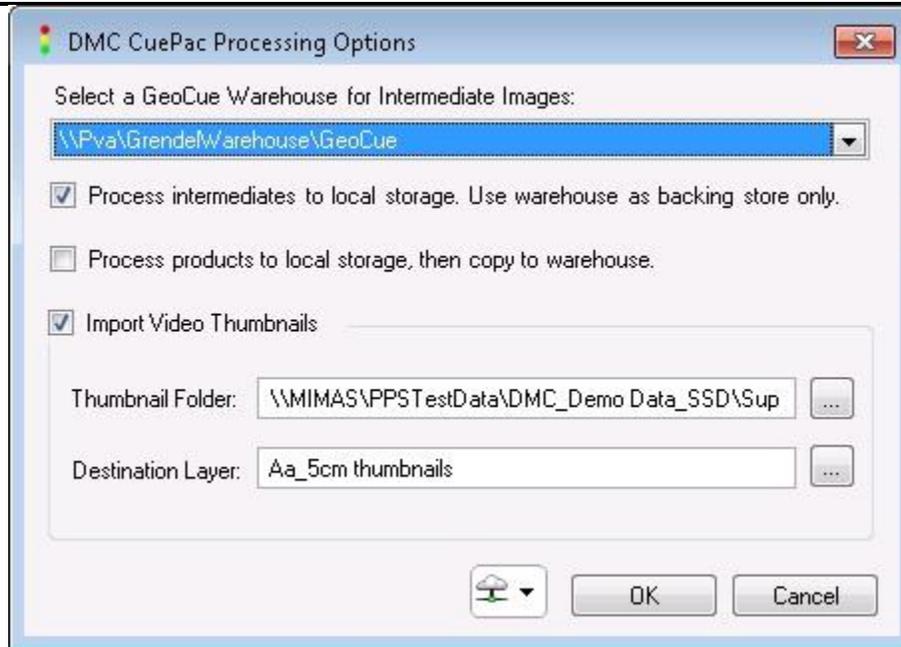


Figure 4-6: Setting the CuePac Processing Options

Alternatively, a performance benefit is possible by selecting the checkbox ‘Process intermediates to local storage’. The GeoCue Remote Cache folder (configured during Client set up) will be used for writing the intermediate images, rather than using a GeoCue warehouse. Note that you must still select a warehouse as an intermediate image location, but this location will only be used for recovering from error conditions during geometric processing. *If local intermediate storage is used, you should be sure to leave **unchecked** the ‘Save Intermediate Results’ option on the Intergraph DMC PPS dialog, as not doing so would impose a very large storage requirement for the local disks.*

Another option also exists for processing the final products to local storage, then when complete, copying the products to the final warehouse destination. Your network and workstation configurations will determine if this option is appropriate for you. However, for most users it is recommended this option be left unchecked.

If the ISPM project has references to the DMC video camera thumbnails, the ‘Import Video Thumbnails’ option allows the thumbnails to be imported and displayed in the GeoCue Map View. An attempt is made to locate the thumbnail folder. If it cannot be found, you may locate it by clicking the browse button to the right of the Thumbnail Folder text box. You may create a raster layer for the thumbnails, or use the default one: “<project name> thumbnails”.

When OK is clicked, the Intermediate image path is constructed based on the warehouse path, created if needed, and added to the files collection on the Project Boundary (Figure 4-7), and attributes set on the DMC Processing tab to indicate your selected options.

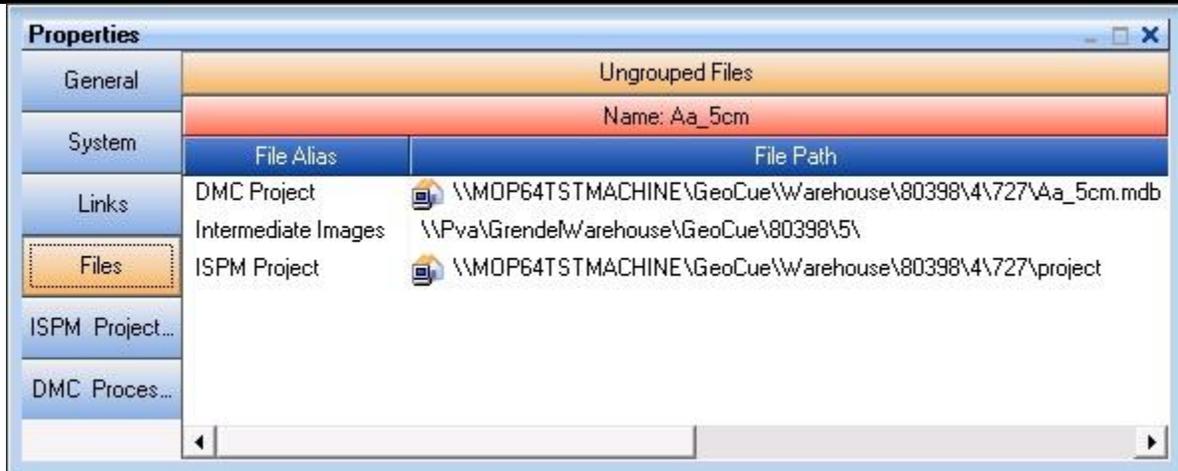


Figure 4-7: Verifying the Intermediate Files storage path

If the Import Video Thumbnails option was selected, you should see the thumbnail images appear in the Map View (Figure 4-8).

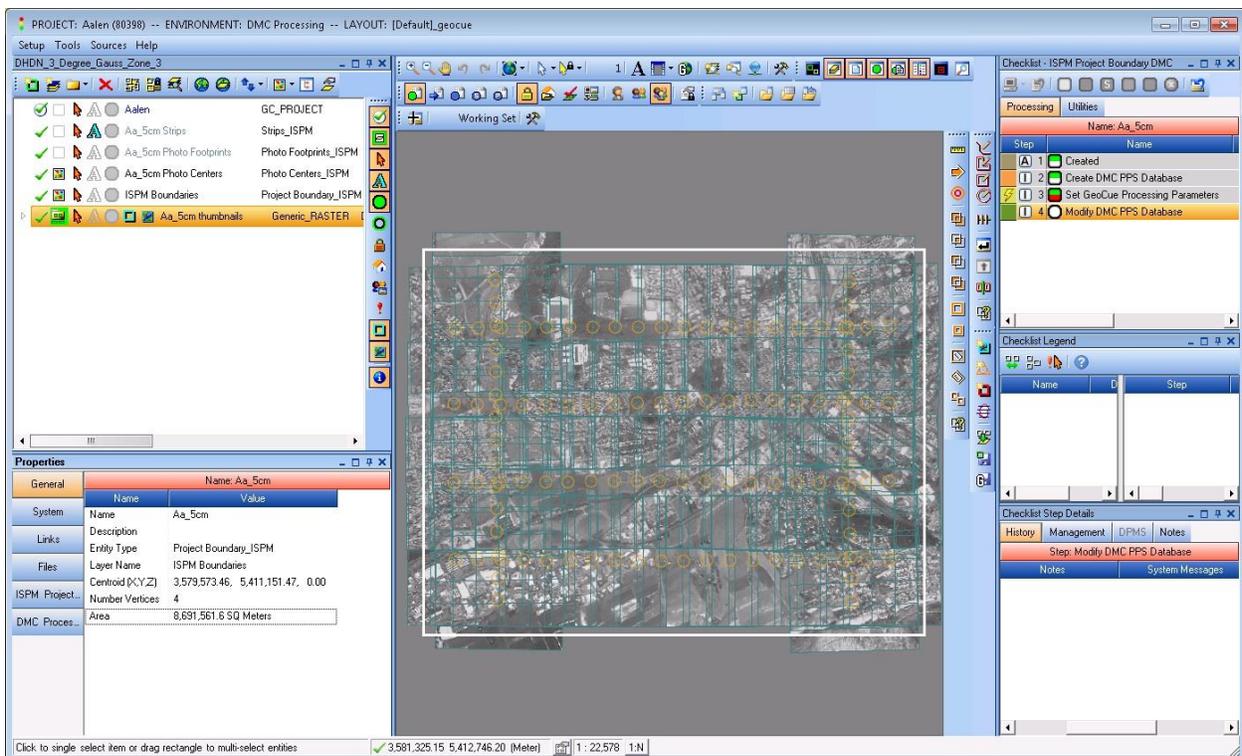


Figure 4-8: Imported Video Thumbnails

4.3 Modify DMC PPS Database

The final step on the Project Boundary checklist is “Modify DMC PPS Database.” This is an Optional step (as indicated by a round, rather than square, step icon). This step is provided to

allow you to change the PPS processing parameters without the need to recreate the PPS database. Normally you will have set the processing parameters during the “Create DMC PPS Database” step and will not need to run this step.

5 Radiometric and Geometric Processing

5.1 GeoCue Command Dispatch System Configuration

The core of the GeoCue DMC PPS implementation is Radiometric and Geometric processing. These steps make extensive use of the GeoCue Command Dispatch System for distributed processing. Your distributed processing system should have been configured prior executing the DMC PPS software (see the Command Dispatch System Administrator’s Guide for configuring this aspect of GeoCue).

5.2 Processing

Select one or more Photo Center entities and add them to the Working Set. The Photo Center entity checklist appears in the checklist pane as shown in Figure 5-1. Notice the small green triangle (arrowhead) superimposed on the step icon for ‘Run Radiometric Processing’. This indicates the next step, ‘Geometric Processing’, will be run automatically when the initial step completes. Due to performance and reliability benefits of running the geometric processing step immediately afterward and on the same machine, this behavior has been assigned to the ‘Run Radiometric Processing’ step.

NOTE: Configuration changes can be made to run these steps separately, but is beyond the scope of this guide.

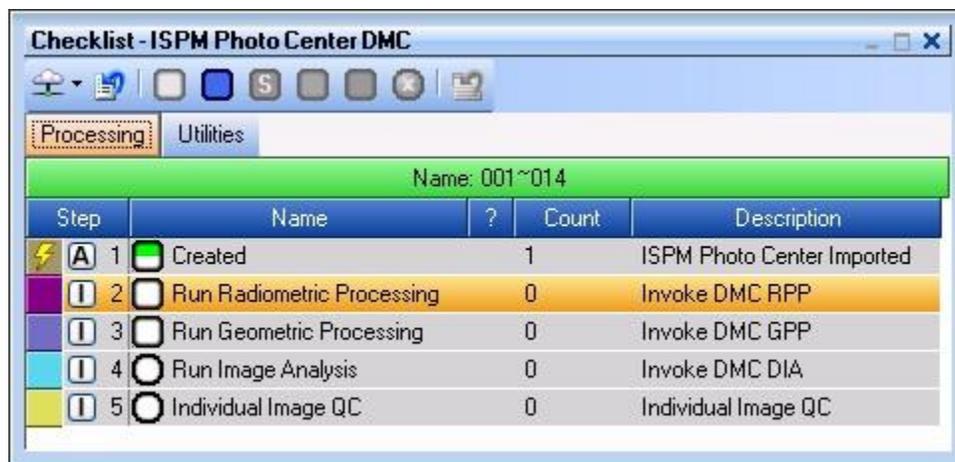


Figure 5-1: Photo Center Checklist with "Run Radiometric Processing" selected

With the ‘Run Radiometric Processing’ checklist step selected, click the ‘In Progress’ (blue) icon. If Cloud Processing is set up and enabled, the selected entities will be automatically

dispatched to the available cloud machines for processing. If *Dispatch Interactive* mode is selected, the GeoCue Dispatch dialog will appear (Figure 5-2) and allow you to select from the available workstations.

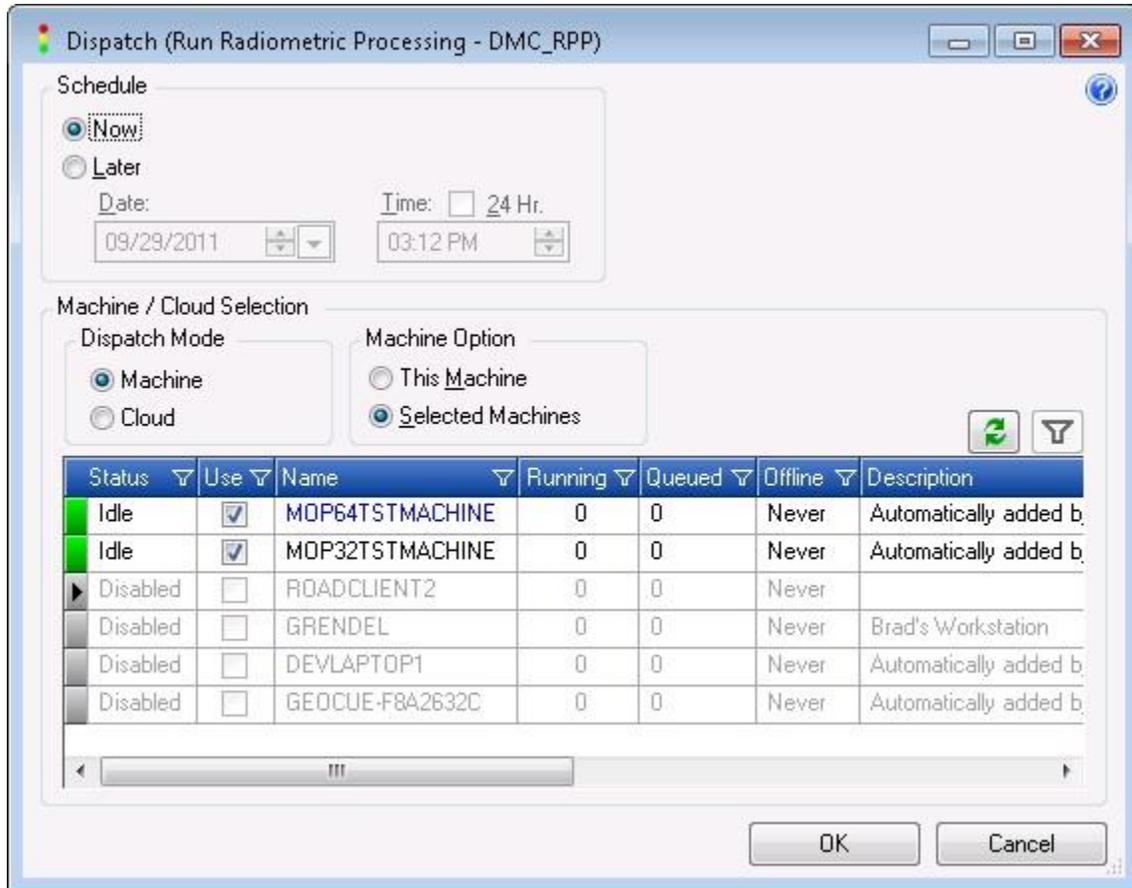


Figure 5-2: Dispatching Radiometric Processing in Workstation mode

Select the workstations (or cloud) and click ‘OK’. Once running the GeoCue Dispatch Manager may be used to monitor progress. You can access the Dispatch Manager dialog from either the GeoCue tool tray icon on your desktop or by selecting **Setup ► Administration ► Dispatch Manager** from the GeoCue client window (Figure 5-3).

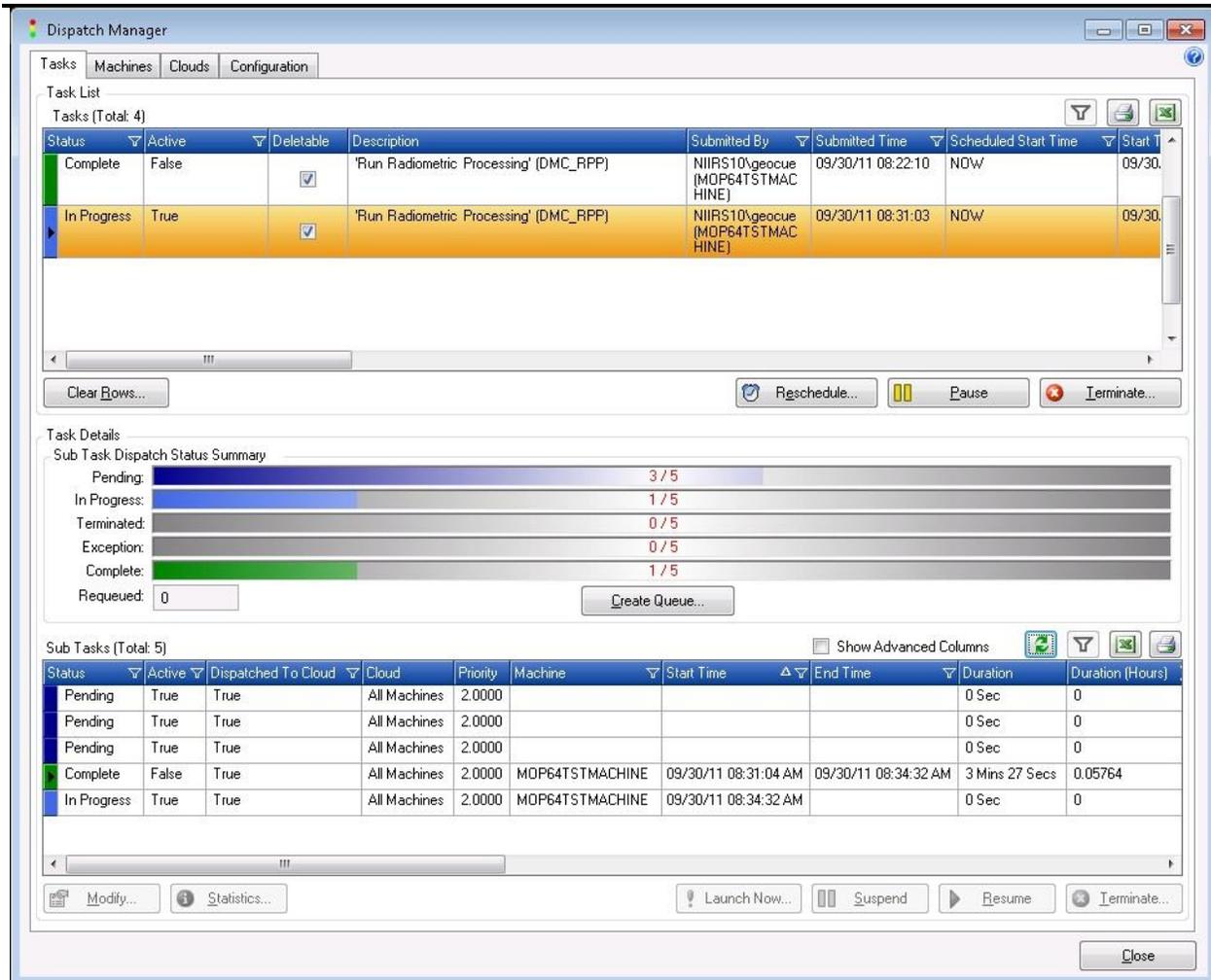


Figure 5-3: GeoCue Dispatch Manager

If Production State display is enabled, the checklist status of entities can be viewed in the Map View, identifiable by the entity outline color (see note below). This color corresponds to the left-most column of the checklist. Note the checklist step status icon for the selected entity is now blue in color, indicating 'In Progress' (Figure 5-4). Since the 'Production State Pending' icon is selected, four other entities are colored purple, indicating they are pending radiometric processing. Selecting 'Production State In Progress' or 'Production State Complete' will color entity outlines corresponding to the checklist step currently being run, or last completed, respectively. For the 'In Progress' case, the default entity color is used for entities which have no step in progress.

Note - To enable display of production state, check the 'Production State (Outline)' column of the photo centers layer in the Table of Contents (TOC). Also, set the 'Production State' icon on the *Symbology* toolbar to the desired state, i.e. Complete, In Progress, etc., and ensure the 'Filter by All Users/Machines' icon is set.

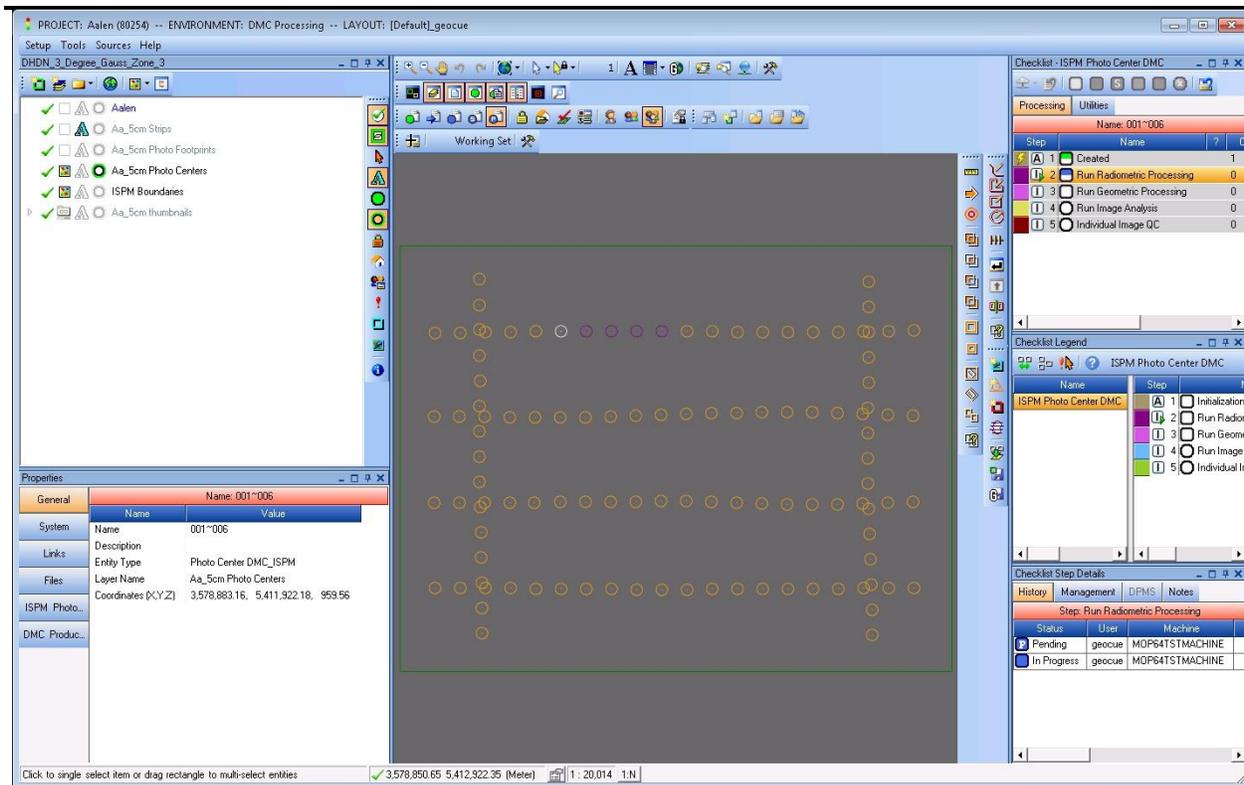


Figure 5-4: Radiometric Processing Pending

As radiometric processing completes for individual photos, the ‘Run Geometric Processing’ step will start automatically. When geometric processing completes, product image files will be added to the files collection of each entity. These can be examined by selecting the *Ungrouped Files* horizontal tab of the Files tab in the Property pane (Figure 5-5).

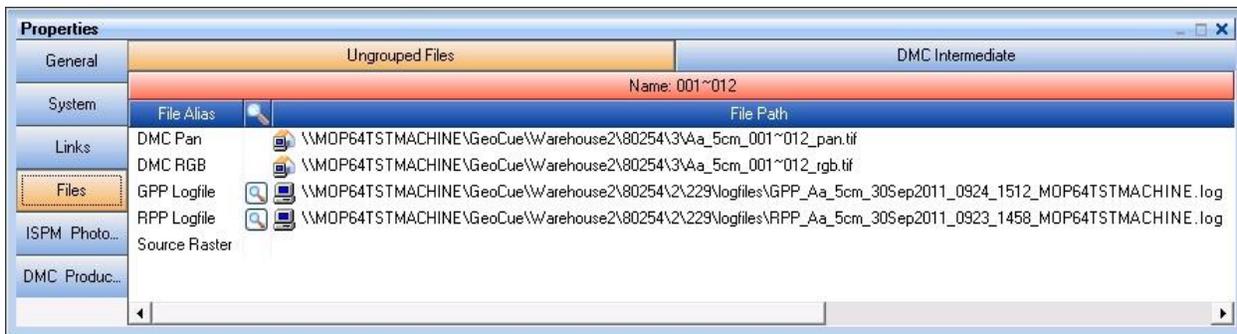


Figure 5-5: The Product images

Also note that the DMC Products attributes in the properties pane are updated to reflect the image products that were created (Figure 5-6).

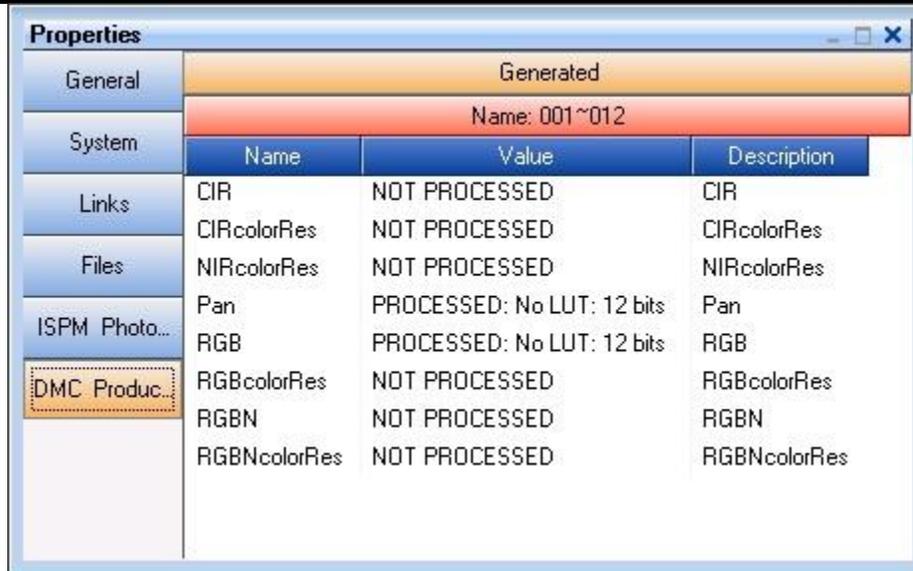


Figure 5-6: Product Attributes

As an aid to analyzing any problems that may occur during processing, the log files created by the radiometric and geometric processing software are included on the Files tab of the properties pane. See the 'RPP' and 'GPP' Logfiles in the *Ungrouped Files* tab (Figure 5-7).

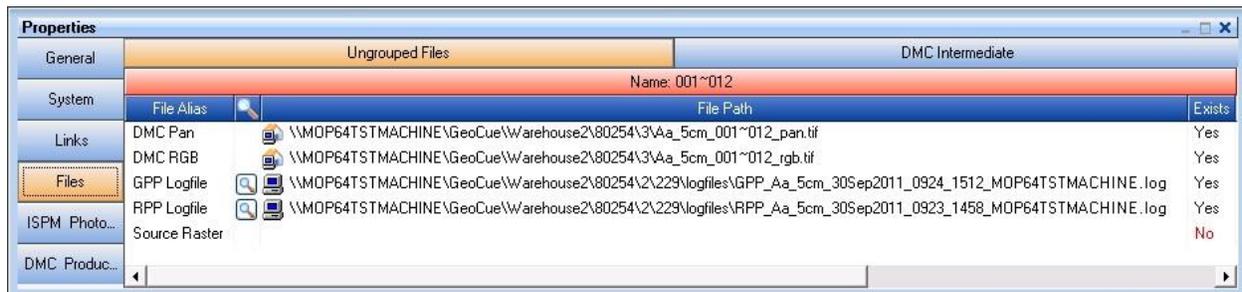


Figure 5-7: RPP & GPP Logfiles

Note – If GPP fails running dispatched, but runs properly using the 'Run Local' mode, check if the GPP logfile indicates an initialization failure of ImagePipe (IPObj). If so, do the following: Select Control Panel > Administrative Tools >Component Services > Computers > My Computer > DCOM Config. Answer 'No' to any warning dialogs, and locate 'Image Pipe API Server' in the main window. Right-click and select properties. On the 'Identity' tab, select 'This user' and enter the credentials and password exactly as used for the GeoCue dispatch service. Click 'OK' and close the remaining opened windows.

6 Adjusting Processing Parameters

Most DMC post-processing workflows are conducted by processing a few images that are representative of the project, adjusting processing parameters and finally processing the entire project. This section of the manual provides the workflow guidance for the integration of the DMC PPS image adjustment tools into the GeoCue workflow. Please see the appropriate Intergraph manuals for the details of applying the actual commands.

6.1 Run Image Analysis

Select one or more Photo Center entities that have been geometrically processed and add them to the Working Set. The photo center entity checklist appears in the checklist pane (Figure 6-1).

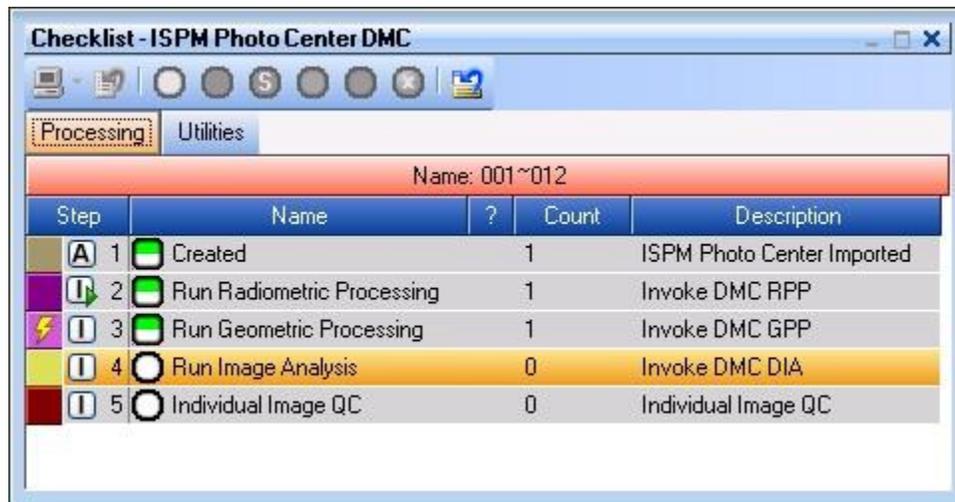


Figure 6-1: Photo Center entity with Run Image Analysis checklist step selected

With the ‘Run Image Analysis’ checklist step selected, click the ‘In Progress’ (blue) icon. The ‘Select Image Type’ dialog will appear as shown in Figure 6-2.

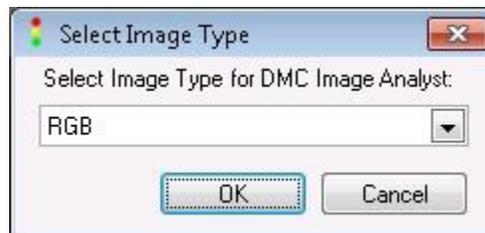


Figure 6-2: Select Image Type dialog

From the list of available output products, select the type you would like to use for running Image Analysis, and then click ‘OK’. The DMC Image Analysis application will open with the selected images loaded (see Figure 6-3).

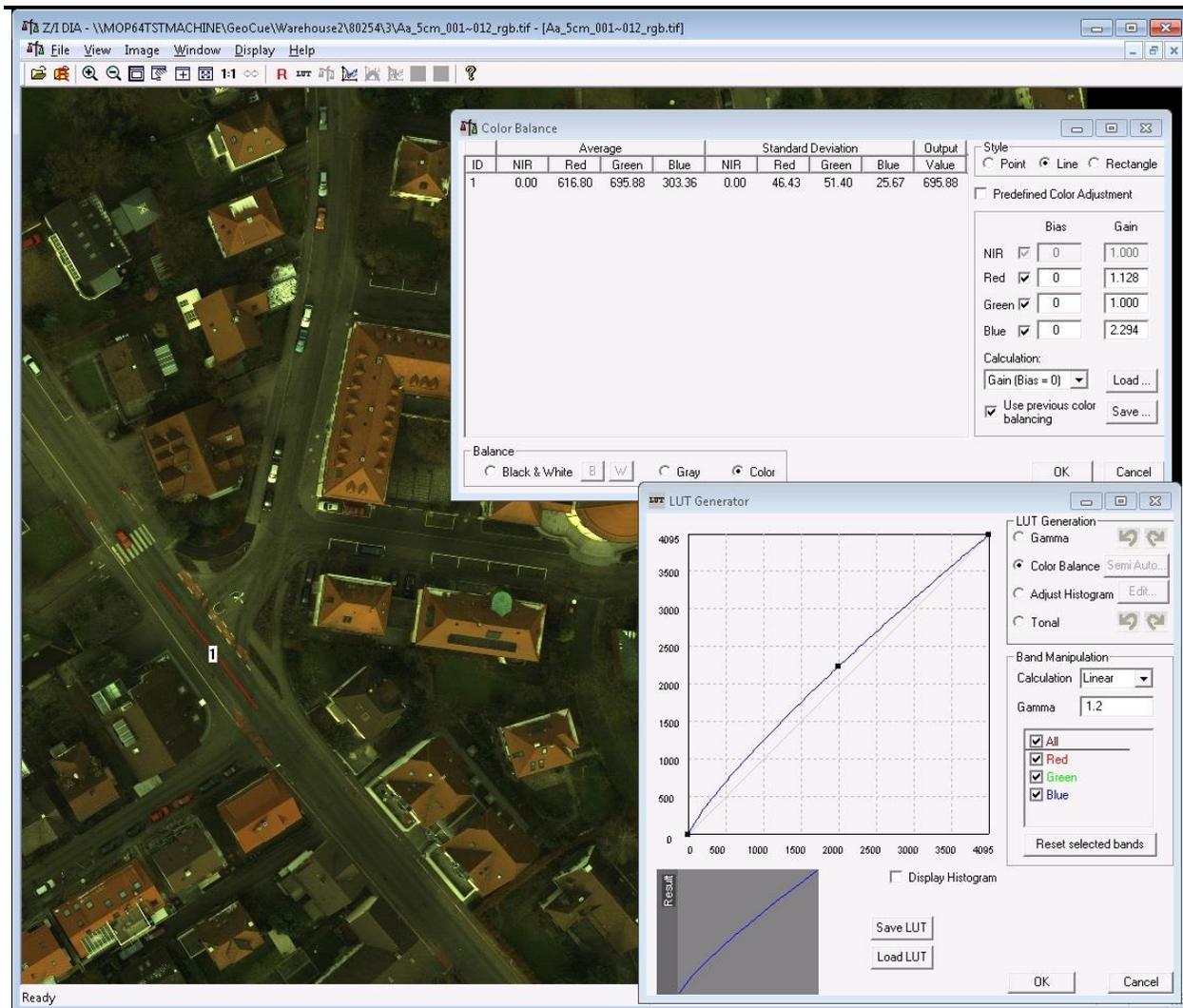


Figure 6-3: Image Analysis dialog

Create the Look-up Table (LUT) as desired, and then be sure to select the ‘Save LUT...’ button. The save location will already be populated, so simply click ‘Save’, then exit out of DMC Image Analyst. GeoCue will detect that a new LUT was created during the session and prompt you to either overwrite an existing named LUT group or to enter a new group name:

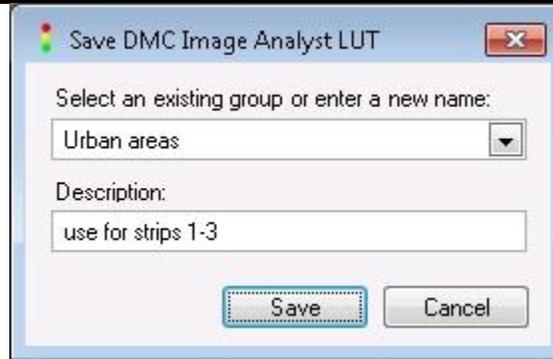


Figure 6-4: Saving a LUT group

Once you click ‘Save’, the LUT group will be saved on the GeoCue project, in a warehouse location. It will also be set as an attribute on each of the photo center entities that were selected to run this step (Figure 6-5).

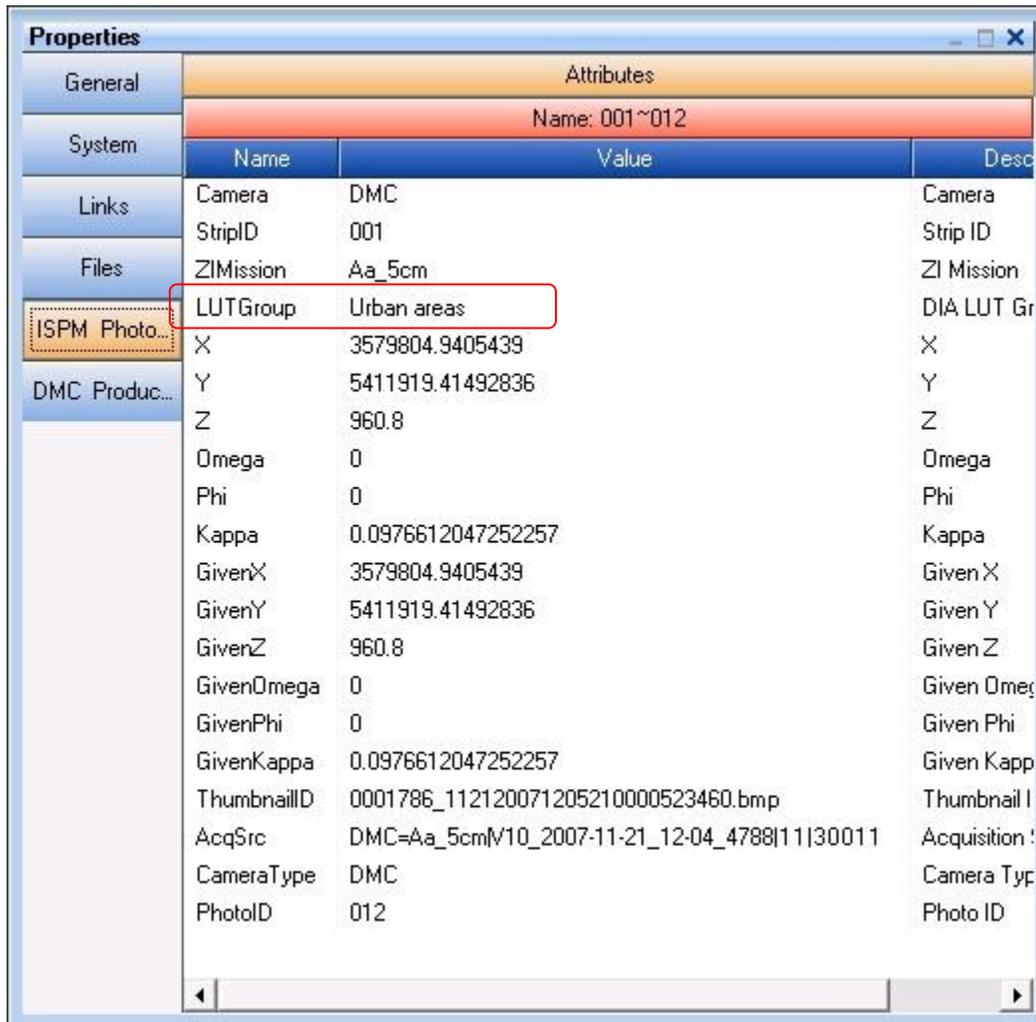
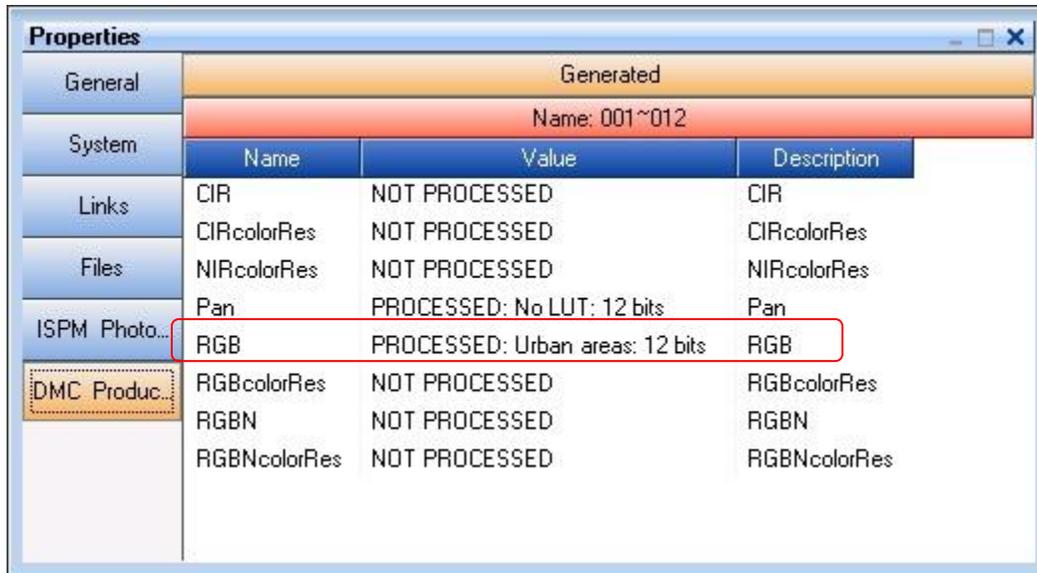


Figure 6-5: Viewing the LUT group

When geometric processing is re-run on these entities, the LUT group will be used for processing. The ‘Set LUT Group’ checklist step, described in the section below, can also be used to set the LUT attribute of other entities to this, or other saved LUT groups, so that when they are geometrically processed, the assigned LUT groups will be used.

The dialog of Figure 6-6 shows the DMC Products properties after geometric processing has been run or re-run with a LUT group assigned:



Generated			
Name: 001~012			
	Name	Value	Description
Links	CIR	NOT PROCESSED	CIR
	CIRcolorRes	NOT PROCESSED	CIRcolorRes
Files	NIRcolorRes	NOT PROCESSED	NIRcolorRes
	Pan	PROCESSED: No LUT: 12 bits	Pan
ISPM Photo...	RGB	PROCESSED: Urban areas: 12 bits	RGB
DMC Produc...	RGBcolorRes	NOT PROCESSED	RGBcolorRes
	RGBN	NOT PROCESSED	RGBN
	RGBNcolorRes	NOT PROCESSED	RGBNcolorRes

Figure 6-6: The DMC Processing tab showing the applied LUT groups

In this example, the RGB image was reprocessed using the ‘Urban areas’ LUT group, which contained only an RGB LUT

6.2 Set DIA LUT

Once you have created Look-Up Tables (LUT) groups using the technique of the previous section, you can assign these named LUT groups to Photo Centers.

Select one or more Photo Center entities for which you wish to assign a LUT group. Add these to the Working Set. On the Utility tab, there is a checklist step called “Set LUT Group” (see Figure 6-7):



Figure 6-7: The Set LUT Group utility step

Select the ‘Set LUT Group’ step, and click the ‘In Progress’ icon. The ‘Set DMC Image Analyst LUT’ dialog will open (Figure 6-8):

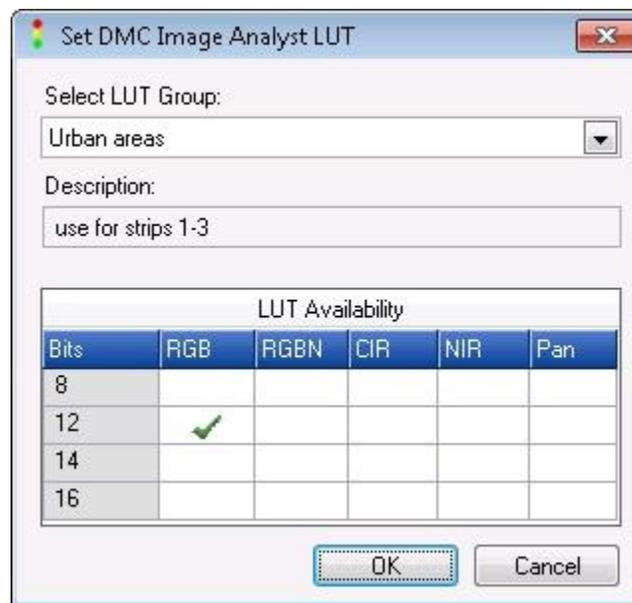


Figure 6-8: Set DMC Image Analysis LUT dialog

The dialog will be displayed showing a list of all available named LUT groups for this project (as created by DIA and described in the previous section). The LUT group selected from the dialog will be saved as an attribute on the selected entities. When the geometric processing step is run or re-run on an entity, the LUT attribute for that entity is examined and the LUT group used for processing. This means that potentially, every photo can have a unique LUT assignment.

6.2.1 Using LUT Groups from other GeoCue Projects

LUT groups created in other GeoCue projects can be copied to the current project. LUT groups are stored as subfolders in the warehouse folder that corresponds to the GeoCue Project layer (GC_PROJECT type). This folder can be identified by double-clicking the project layer in the GeoCue Table of Contents (TOC): 'Path on Disk' provides the location. Simply copy the LUT group folder(s) from the source project to the project layer warehouse folder of the current project. These LUT groups will appear in the 'Set DMC Image Analyst LUT' dialog shown above, without the need to run the Image Analysis step.

7 Individual Image QC

Several strategies are available in the DMC PPS CuePac for checking image quality. A quick method of examining images is by stepping through the images using the built-in GeoCue viewer. A second method is a formal checklist-step driven process of conducting detailed, individual image set QC. Finally, there are additional features especially useful for QC and annotation of raster imagery from the GeoCue map view. The later would require using the Import Raster command to load the products into the map view first. Use of the new configurable queues for the QC/annotation process is described in detail in the GeoCue User Guide. The previously mentioned methods are described in the two sections that follow.

7.1 Quick Check QC

The quick check method uses a GeoCue “named” queue and the built-in raster viewer to quickly move through a group of images.

NOTE: GeoCue defaults to displaying the RGB images created by the DMC PPS. If you need to QC a different image set, you will need to reconfigure the Photo Center entity default viewer using Environment Builder.

First, create a named queue by selecting the *Queue Manager* icon from a Queue toolbar (you may need to right click at the top of the Map View in the toolbar area and select “Queue Toolbar 1” button to activate a queue). This will display the dialog of Figure 7-1. Press the *New...* button to open the Queue creation dialog (Figure 7-2).

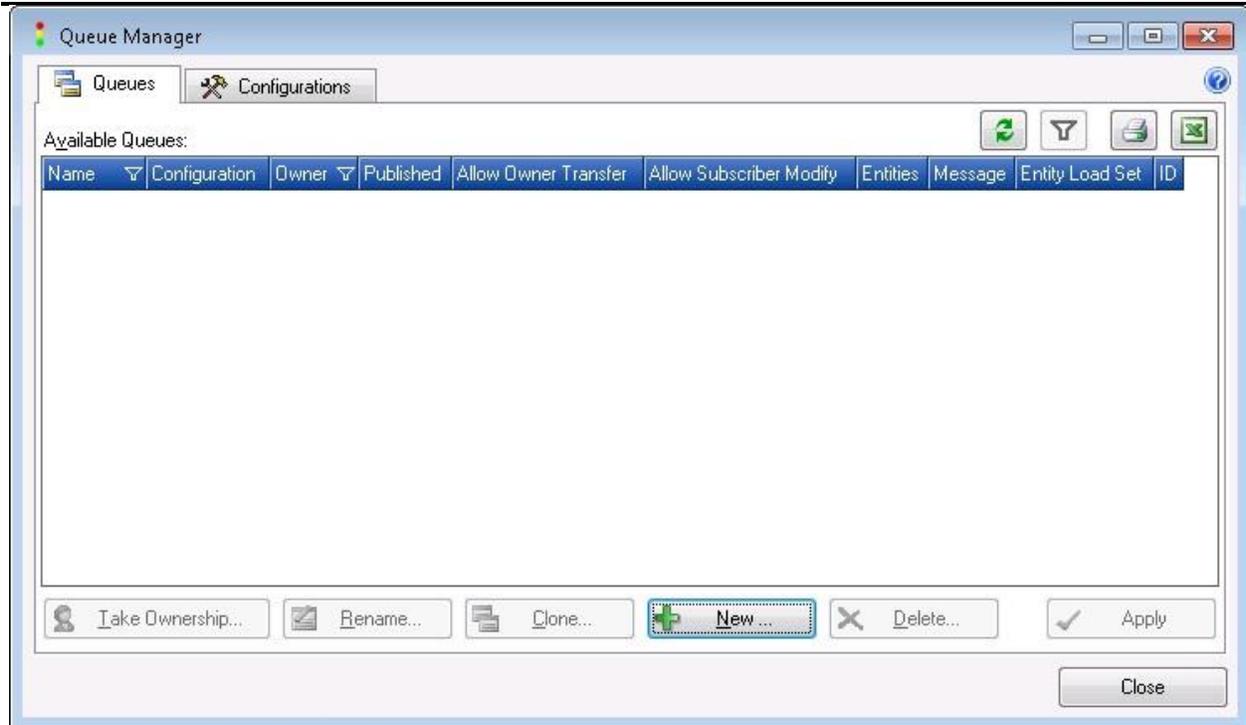


Figure 7-1: Queue Manager

Give the Queue a name (we use QC in our example) and press OK. Set the Create New Queue options as shown, and press *Close* to dismiss the Queue Manager toolbar.



Figure 7-2: Create New Queue dialog

If your queue toolbar does not display the newly created queue in the drop-down name space of the toolbar, select it by pressing the down arrow next to the name section.

Select the Photo Centers of the images that you wish to review. Now press the + button on the newly created Queue. This adds the selected Photo Centers to the queue. The Photo Centers added to the queue should now be displayed in green in the Map View window of GeoCue Client.

Enable the Raster Viewer tool by pressing the RasterVue tool on the View Panes toolbar (Figure 7-3).



Figure 7-3: Enabling RasterVue

As you advance or step back through the Queue, the associated image will display in RasterVue (Figure 7-4). In addition, the Properties Pane will display metadata associated with the selected image. Please see the GeoCue Workflow Guide if you need additional information about using named queues in GeoCue.



Figure 7-4: Displaying a DMC image in RasterVue

7.2 Checklist Driven Image Set QC

Photo Centers in the default configuration of DMC CuePac contain a final processing step entitled “Individual Image QC” (Figure 7-5). This step is linked to the Intergraph application “RasView.”

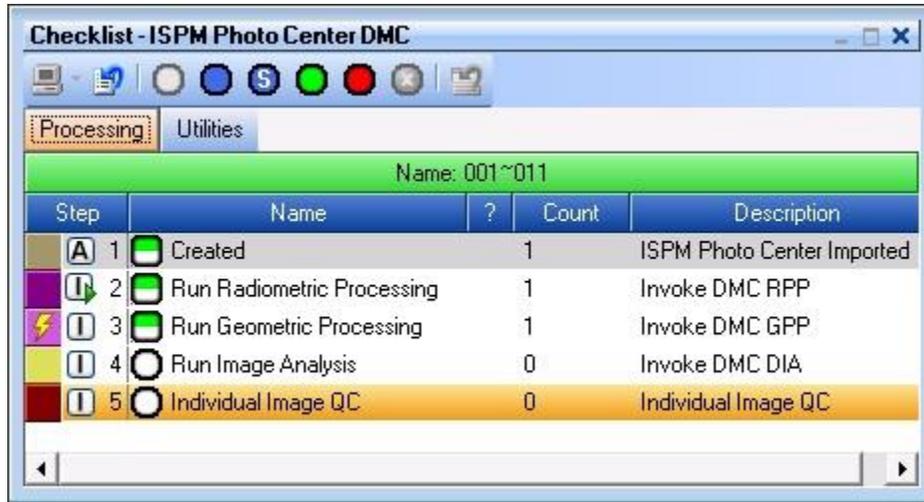


Figure 7-5: Individual Image QC checklist step

This checklist step is started by selecting a single photo center to the Working Set and setting the step to ‘in-progress’. The step launches an image viewer that can be run from the command line. The initial implementation uses RasView.exe and it will be started with all product image types available in the files collection for the selected Photo Center entity. Figure 7-6 corresponds to the files collection shown in the sections above: Pan and RGB product images have been created.

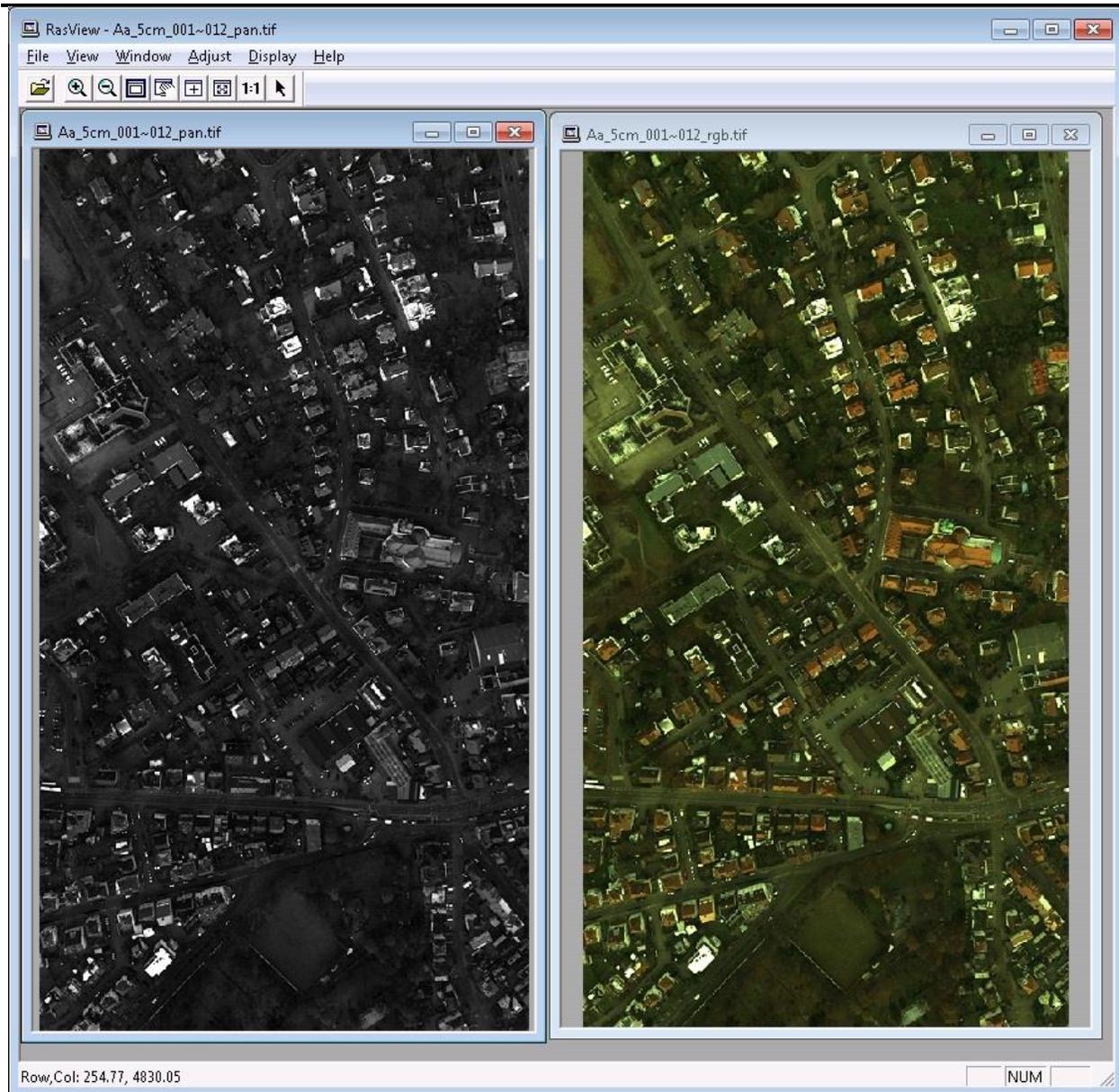


Figure 7-6: RGB and Pan images displayed in RasView

When the user closes the viewer, the standard GeoCue status dialog appears and allows the status to be set and a note recorded for the QC step (Figure 7-7).

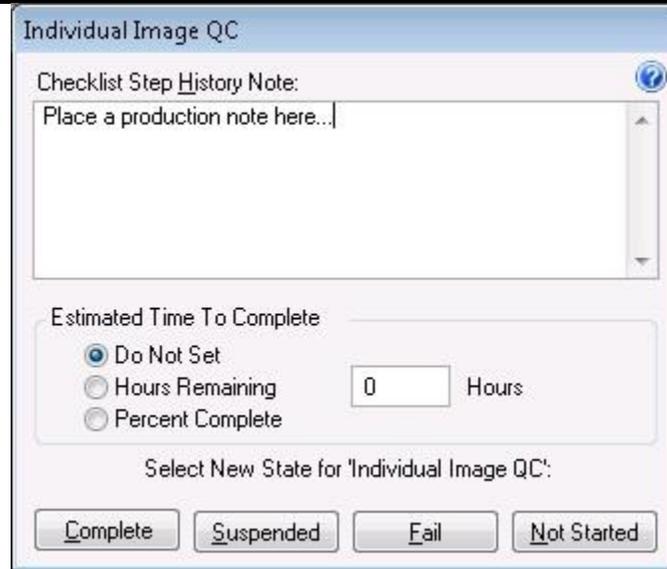


Figure 7-7: Processing History dialog

8 Miscellaneous Operations

The Project Boundary and Photo Center entities contain several useful *Utility* operations.

8.1 Set PPS Processing Parameters

The Set PPS Parameters optional processing step on the Project Boundary allows you to change the processing parameters after the PPS database has been created (for example, you might want to change the image output types).

Add the Boundary entity to the Working Set and set this step In Progress to launch the main DMC PPS dialog. This is used for specifying which Output products to create and also for setting the Output Options, such as bit depth and compression.

8.2 Delete Intermediate Images

The Photo Centers contain a Utility processing step on their checklist that allows you to delete the Intermediate PPS images (the images that result from the Radiometric processing step).

This command provides a means to remove only the intermediate images for any or all photo center entities in the project. The entity or entities are placed in the Working Set and the step put into progress. There is no dialog displayed for this step. Progress can be monitored via the Dispatch Manager or entity lock status.

8.3 Export ISPM Project

Photo Centers contain a Utility process step called “Export ISPM Project”. This is a very useful tool that allows creation of ad hoc ISPM projects from a DMC processing project. This step allows an ISPM project to be created and exported to a directory selected by the user.

The step is run by selecting one or more Photo Center entities, placing them in the Working Set and setting the step In Progress. This will display the dialog of Figure 8-1.

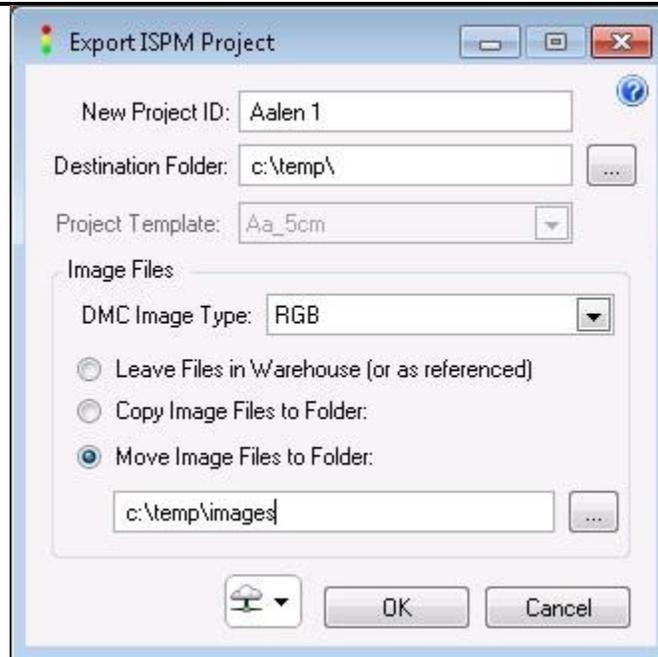


Figure 8-1: Export ISPM Project dialog

If more than one product image type exists for the selected entities, the ‘DMC Image Type’ combo box will allow the user to select which image type will be used to write to the exported ISPM project (i.e. Pan, RGB, CIR, etc.). Additionally, the user may choose to leave the images in the GeoCue warehouse or an export folder may be specified, to which the image files will be copied from the warehouse. The paths in the ISPM *photo file* will be updated accordingly.

9 GeoCue Option Settings

The following are the options settings used in these notes. From the GeoCue menu bar, select **Setup ► Options ► GeoCue...**

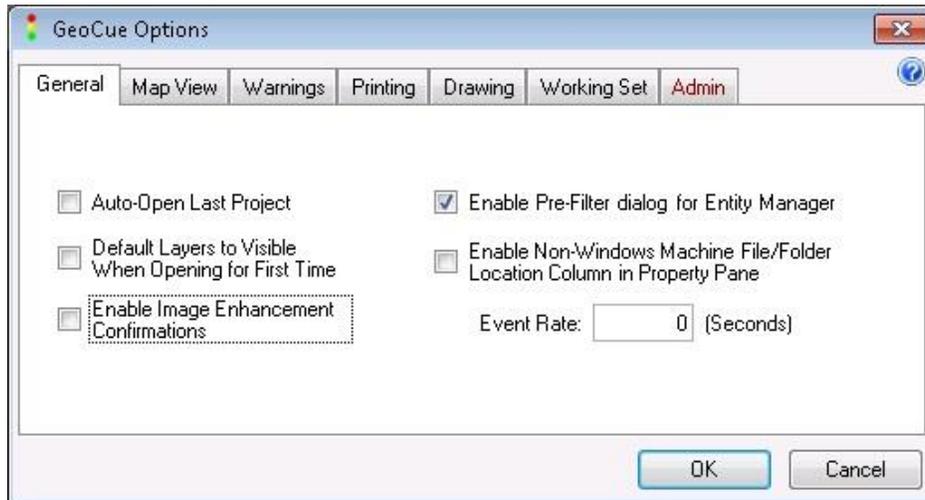


Figure 9-1: General GeoCue options

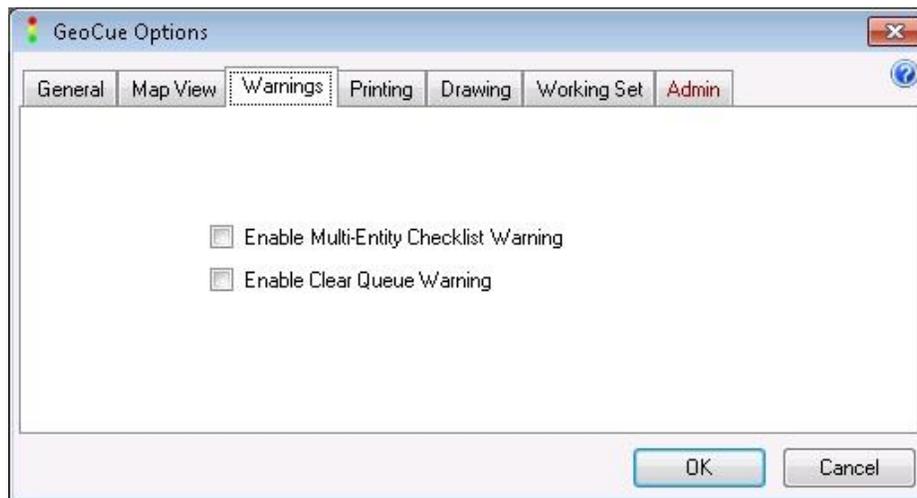


Figure 9-2: GeoCue Table of Contents (TOC) settings

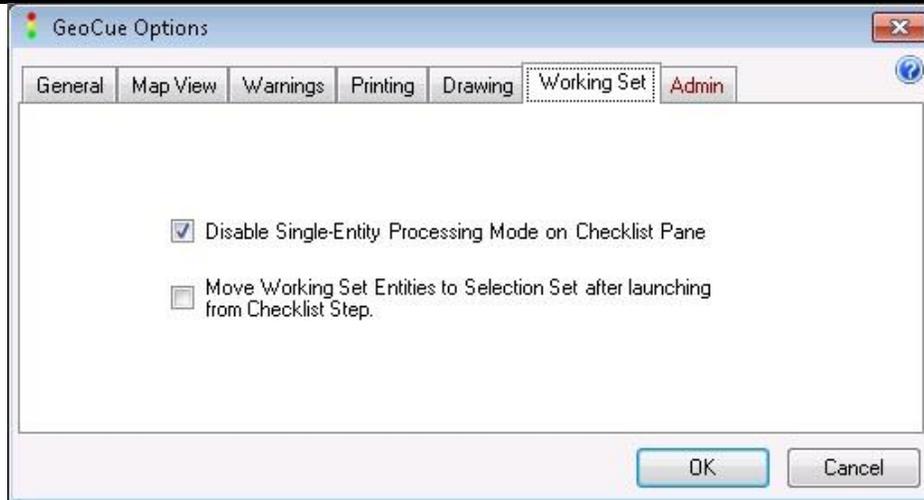


Figure 9-3: GeoCue Warning levels

If the ‘Checklist Step Details’ pane is docked in the lower right corner of the GeoCue application, click the title, hold down, and drag to the center, to tear off the window. Resize the window so that it appears as follows, then close the window by clicking the red X in the upper right corner. The window will appear this size and in this location anytime a checklist step is double clicked. This is more convenient than its default, docked location and size.

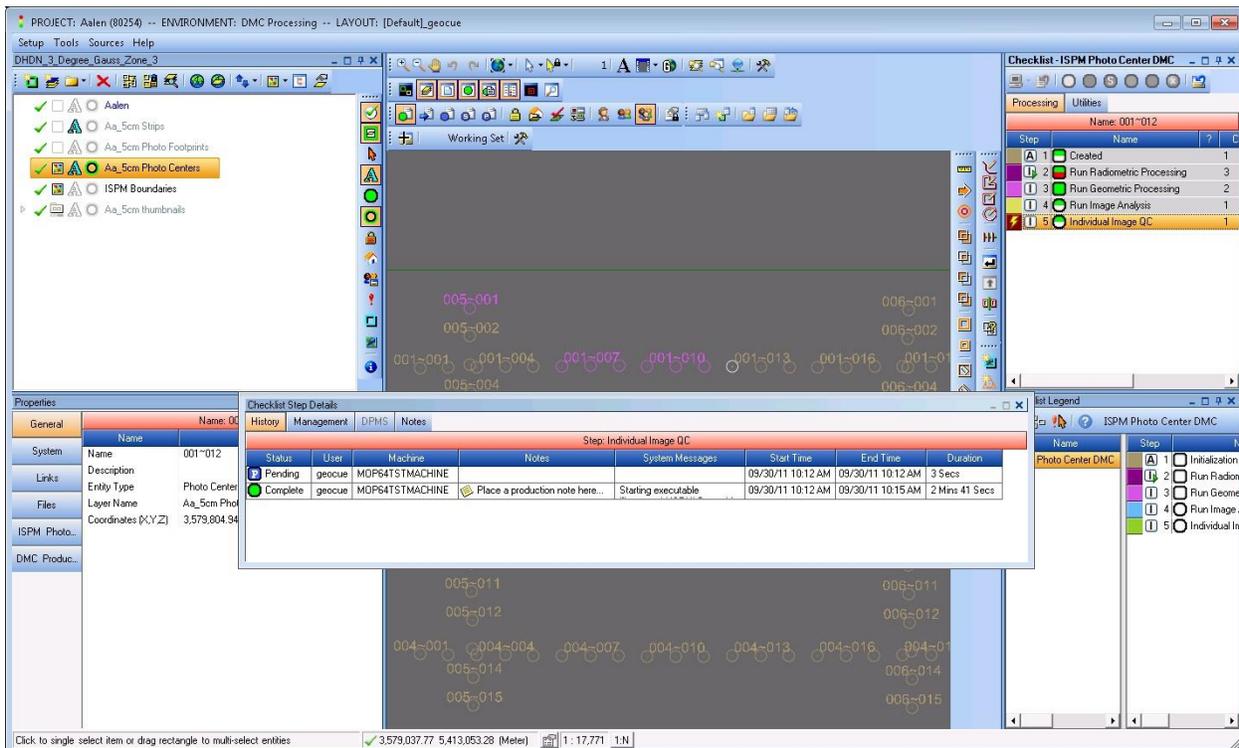


Figure 9-4: Positioning the GeoCue Processing History details pane

10 Concluding Remarks

We hope that you are finding working with the GeoCue product family to be a significant increase in productivity and ease of use. Hopefully you have not discovered too many software defects (bugs).

11 Acronyms

CDS	Command Dispatch System
DMC™	Digital Mapping Camera
ISPM	ImageStation Photogrammetric Manager
MBR	Minimum Bounding Rectangle
QC	Quality Check
PPS	Post-Processing System
TOC	Table of Contents
USB	Universal Serial Bus