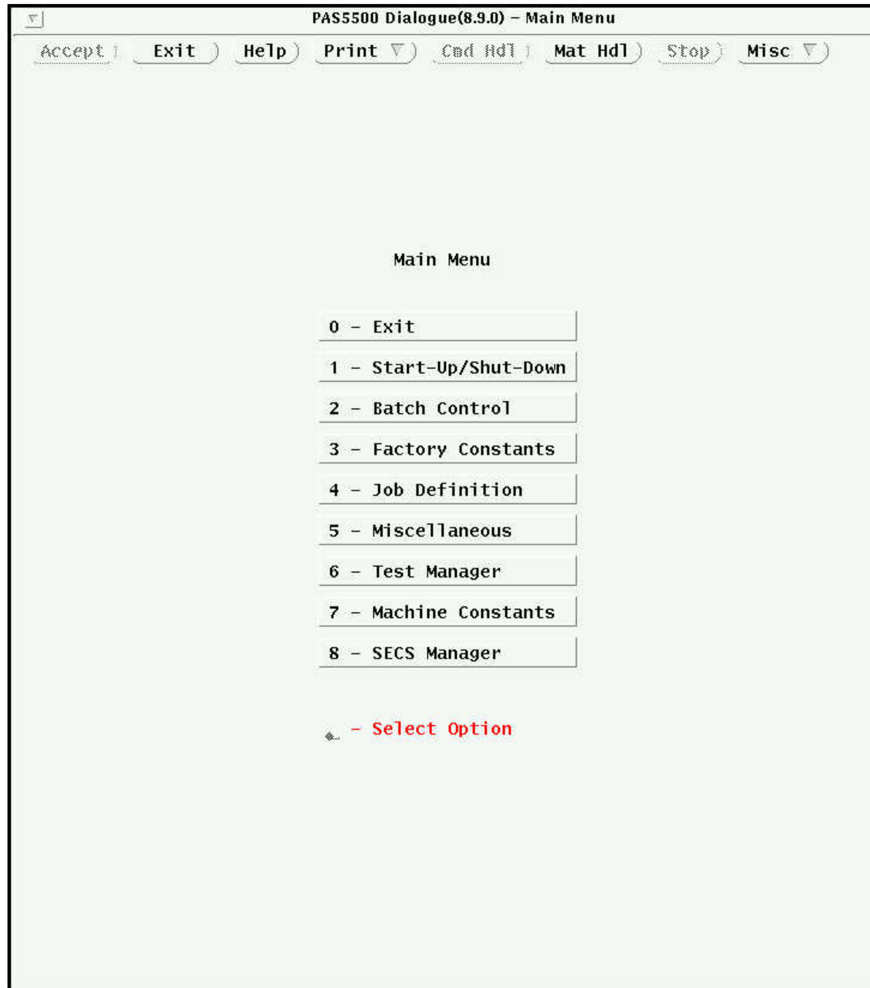
ASML Job Cheat Sheet

Job Definition



Select Job Definition, then select Modify Job.

Modify Job

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PAS5500 Dialogue(8.9.0) - Job Definition
Accept  Cancel  Help  Print  Cmd Hdl  Mat Hdl  Stop  Misc

Modify Job

Job Name : example
 Select

Machine Configuration
  Machine Type         : /300  - 78-Lens
  Lens Reduction       : 4x
  Reticle Size [inch]  :   6

Wafer Layout
  Type                 : SEMI
  Diameter             : 4 inch - 100.0 mm
  Notch                : N
  Flat-Edge Length     :  32.5000

Comment                : Example job
```

Name – type in a name for your job, then press <**Enter**>.

Machine Configuration – Machine Type should be: **/300 – 78-Lens**.

Wafer Layout – Diameter should usually be **4 inch – 100 mm**. Select Flat or Notch.

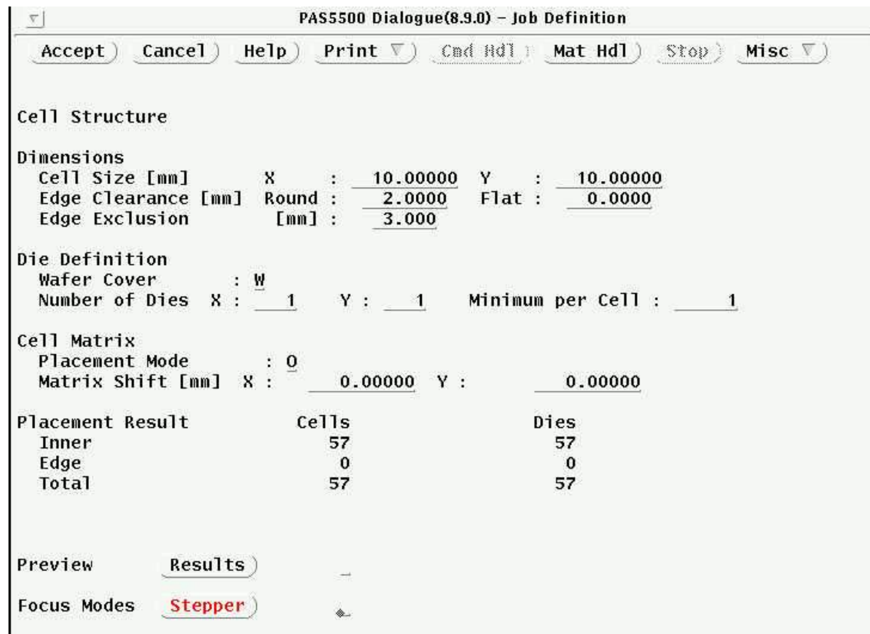
Note: these values cannot be changed later.

Comment – type in comments one line at a time, then press <**Enter**>.

Click on the Accept button on the upper Left when finished.

Wafer Layout

Cell Structure

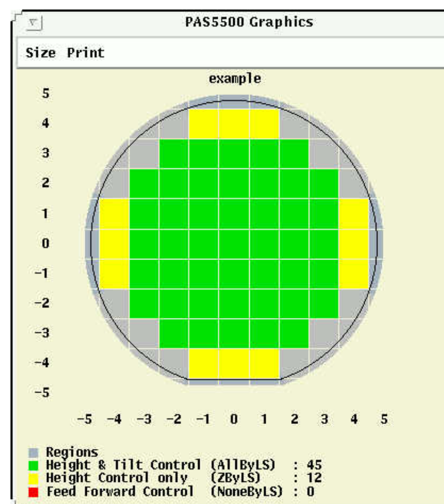


The center-to-center distance between exposures, or ***step size***, in X and Y is determined by <u>Cell Size</u>. Type in each distance required, then <**Enter**>. <u>Die</u> is a subset of the <u>Cell</u> and can usually be ignored.

<u>Minimum per Cell</u> – this is the minimum number of <u>Dies</u> per <u>Cell</u> required to be within the good area of the wafer as defined by the <u>Edge Exclusion</u> and can usually be ignored.

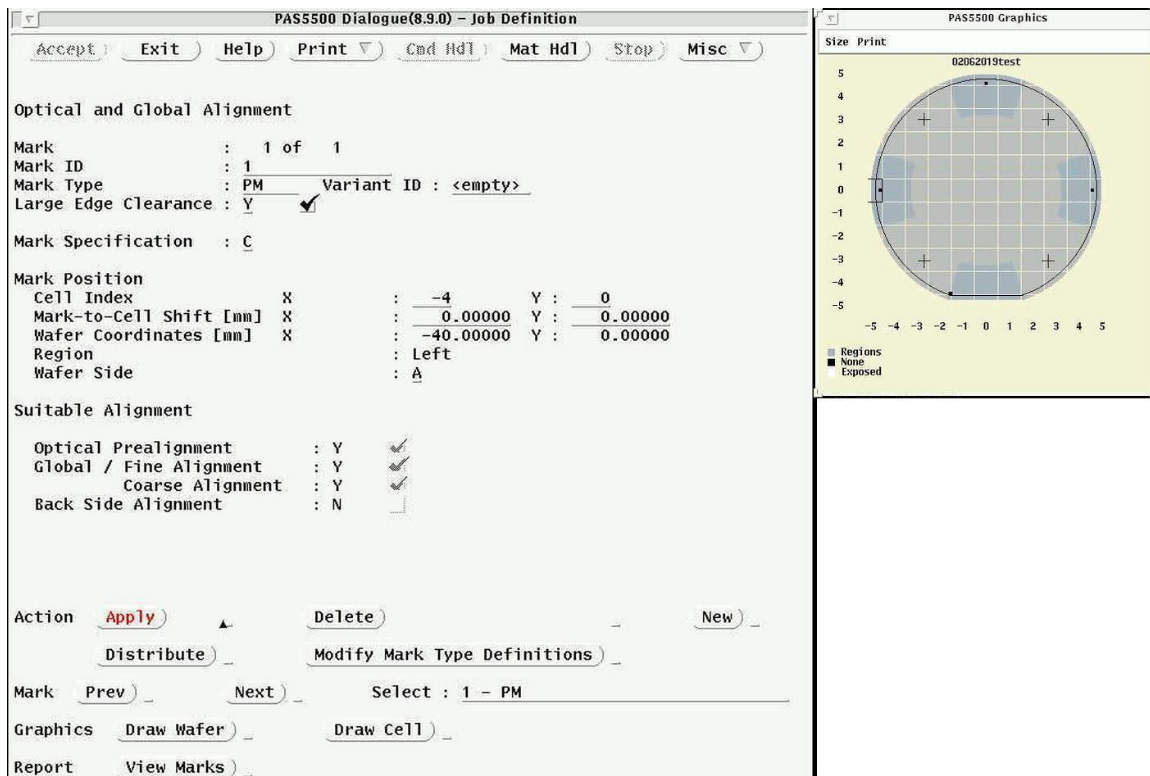
<u>Cell Matrix</u> – allows placement of the array by <u>C</u> (the Computer), or <u>O</u> (the Operator).

<u>Results/Stepper</u> – allows viewing of the defined array on the wafer.



Click the <u>Accept</u> button at the top Left when finished.

Alignment Definition



Select Optical and Global Alignment.

Here you determine the location of each alignment mark on the wafer for your process. It is recommended that you place at least two marks within the dark gray areas in the display; this will allow Optical Prealignment.

For Back Side Alignment (3D-Align) you ***must*** use the pre-determined locations (±26.8, ±30.6) and place them on the side opposite your pattern (A or B).

Marks should be etched 120nm deep for the front side, 160nm deep for the back side.

Mark ID - select PM mark.

Mark Specification - use W (wafer) or C (cell) as the method to define mark locations.

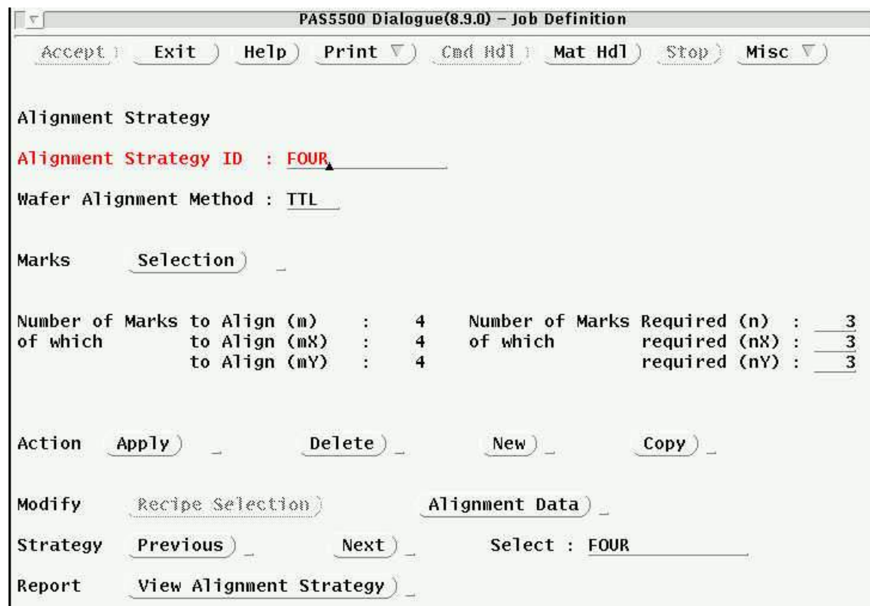
Mark Position:

Wafer allows mark location definition using Wafer Coordinates. Type in each mark coordinate, then <**Enter**>.

Cell allows mark location definition using the mouse (or Index numbers) for cell selection. Select each cell and type in each mark shift vector, then <**Enter**>. Click Apply for each mark, then New to create another mark.

Click Exit when finished.

Alignment Strategy



The Alignment Strategy defines the number and locations of marks required for your process. You must name your alignment strategy. Different strategies may be used for different layers.

Alignment Strategy ID – type in the name of the strategy, then press <**Enter**>.

Wafer Alignment Method – select TTL.

Click Selection. A new screen will open.

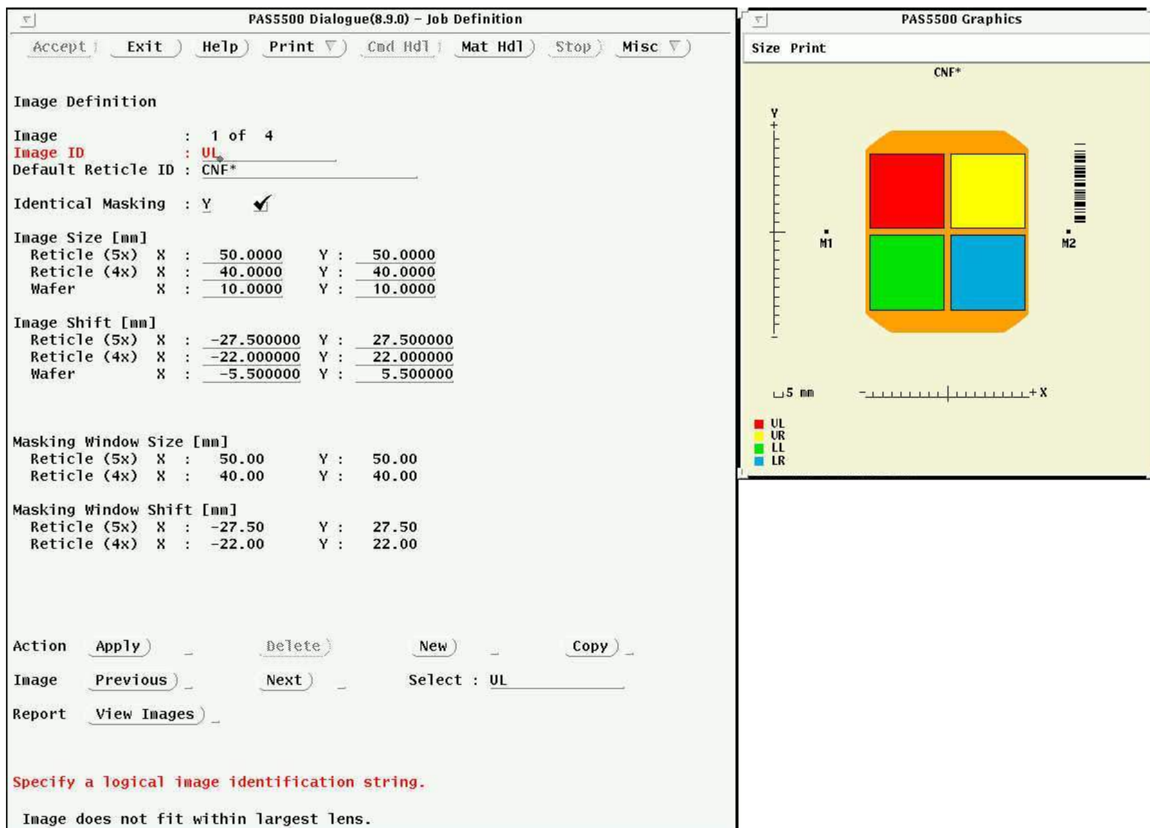
On the new screen, select the marks you want to use. Click to select or unselect each alignment mark.

Click Add to use the selected marks, then click Exit.

Back on the original page, click on Number of Marks Required, enter the ***minimum*** number of marks you want to use, then press <**Enter**>.

Click Apply, then Exit, then Exit.

Image Definition



Name and indicate the size and location of each image to be exposed on your reticle.

Image ID – the name of each Image on the reticle. Type in the Image name and press <**Enter**>.

Default Reticle ID – the Barcode on the reticle. It ***must*** match the reticle to be used. Asterisks can be used as Wild Cards. Type in the Barcode information and press <**Enter**>.

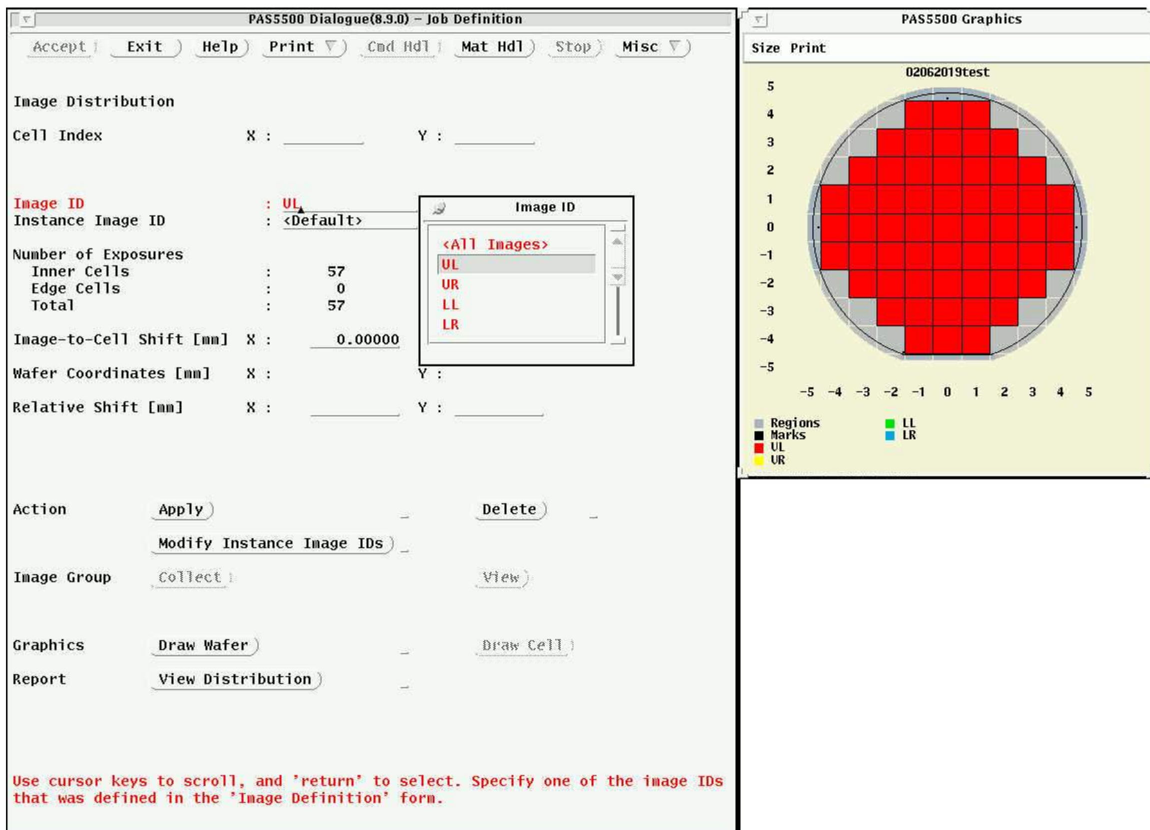
Image Size – the extents in X and Y of each Image. Use Wafer scale values. Type in each value to use and press <**Enter**>.

Image Shift – the offset of the center of each Image from the center of the reticle. Use Wafer scale values. Type in each value to use and press <**Enter**>.

Click Apply, then New or Copy to define the next Image.

Click Exit when finished.

Image Distribution



Indicate the cell locations where you want to print each image on the wafer.

Cell Index – cell locations can be entered manually or selected using the mouse. Use the middle mouse button to select groups of cells.

Image ID – for each group of cells selected, select the Image to distribute from the list, then click Apply.

When finished, click Exit, then Exit.

Layer Layout

Layer Definition

PAS5500 Dialogue(8.9.0) – Job Definition

Accept | Exit | Help | Print | Cmd Hdl | Mat Hdl | Stop | Misc

Layer Definition

Number of Device Layers : 4

Modification Layer
Layer Number : 2
Layer ID : UR
Wafer Side : A

Action Apply

Layer Previous Next Select : 2 – UR

Layer ID New Delete Copy

Layer Number Insert Append

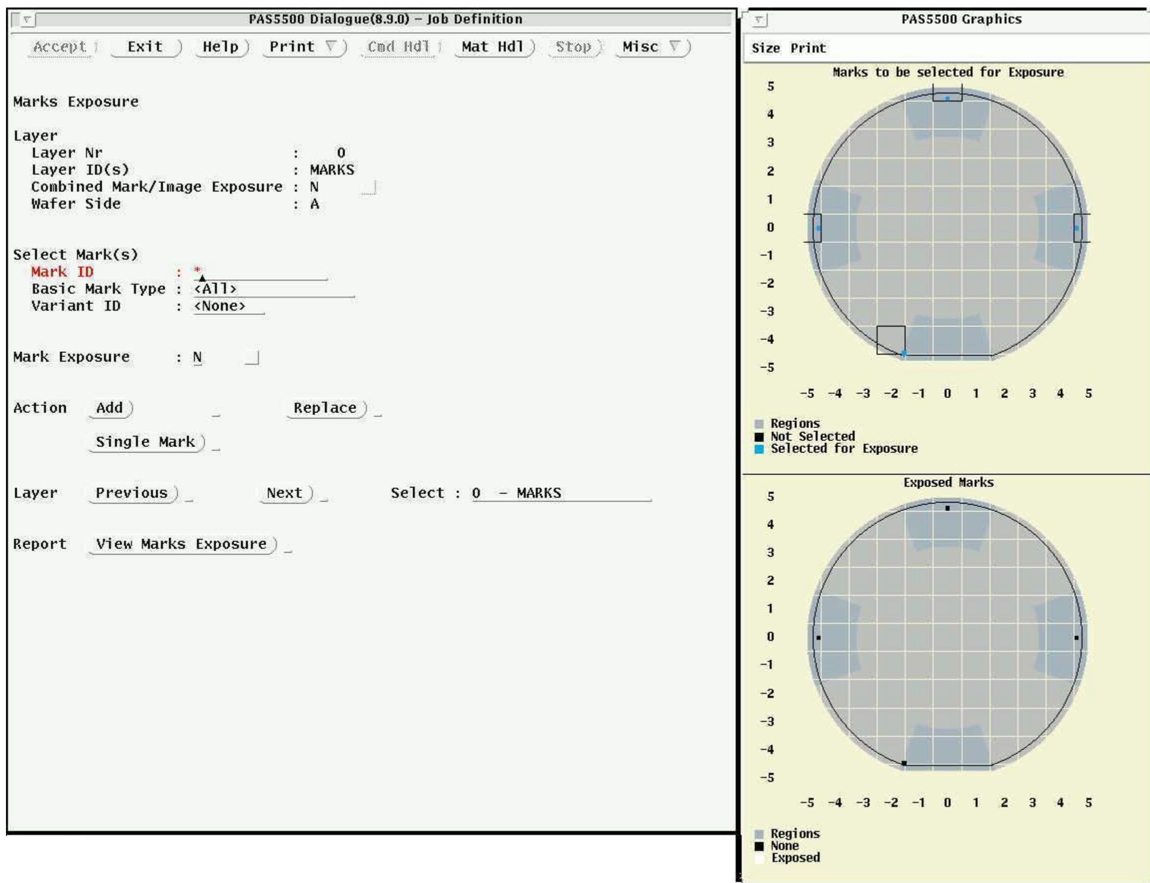
Report View Layer Definition

Number of Device Layers – type in the number of ***device*** layers you will expose, press <**Enter**>, then click Apply. Alignment mark layer is Zero by default.

Layer ID – type in a name for each Layer, press <**Enter**>, then click Apply.

Click Next for the next Layer or Exit when finished.

Marks Exposure



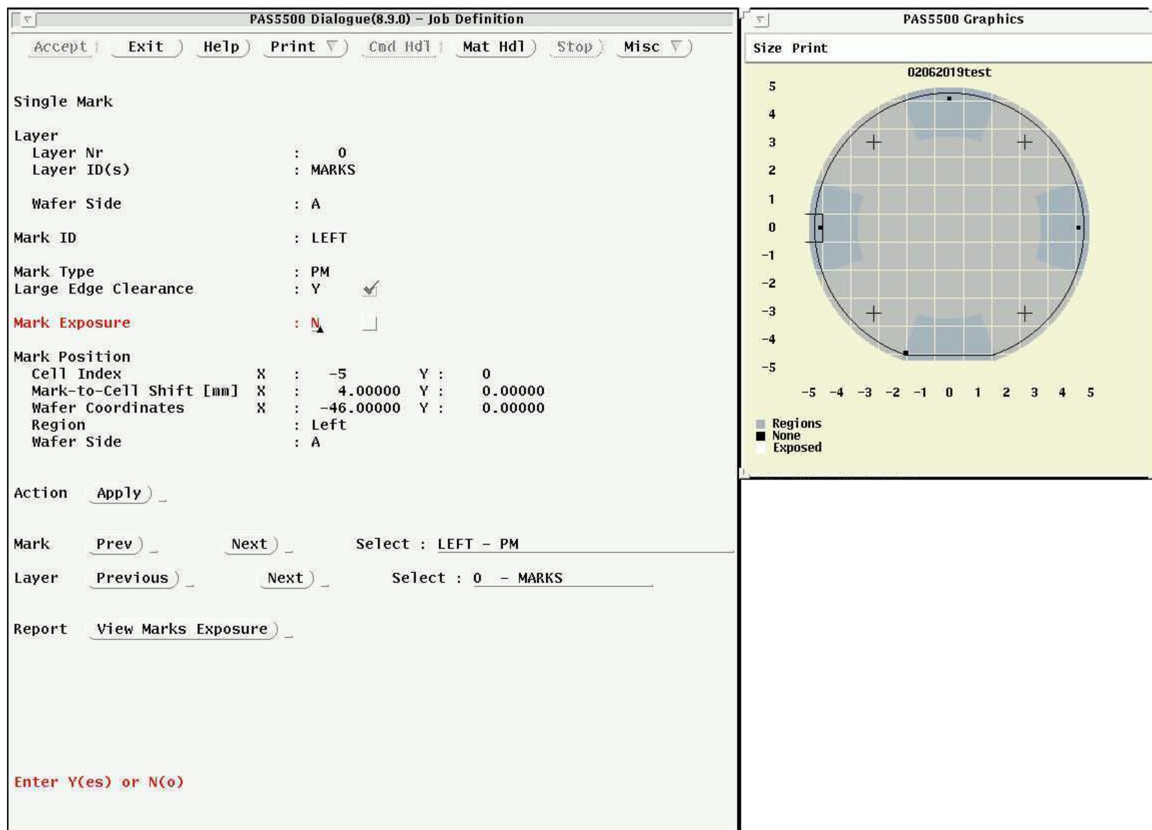
Indicate the layers where you want to expose alignment marks.

When using an alignment mark Zero layer: click the Mark Exposure box, make sure Layer 0 is selected, then click Add.

Click Exit when finished.

For Combined Mark/Image Exposure (***not recommended***): click Single Mark. See next page.

Single Mark



Instructions for Combined Mark/Image Exposure:

Mark Exposure – for ***each mark***, uncheck Mark Exposure in Layer 0, then click Apply.

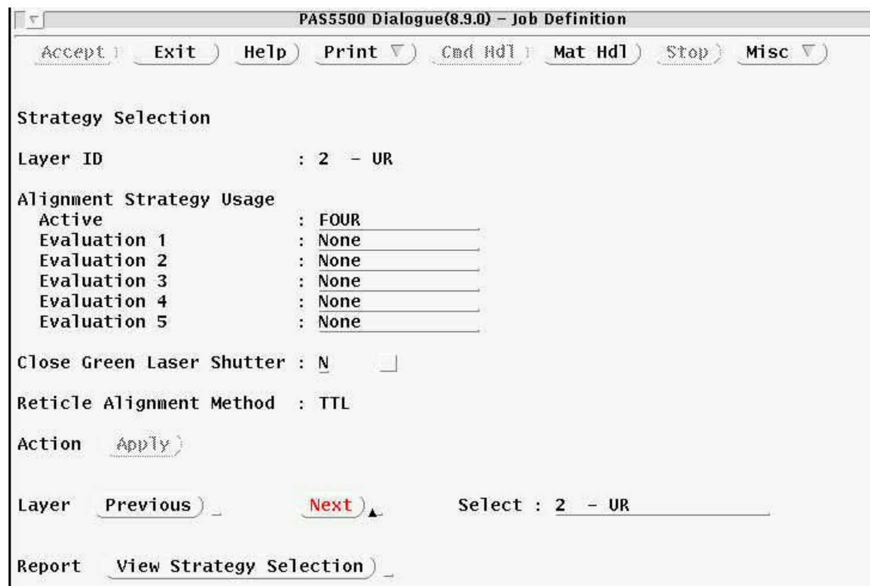
Click Next at Layer to change to Layer 1.

Check the Mark Exposure box, then click Apply.

Repeat all steps for each mark.

When finished, click Exit, then Exit.

Strategy Selection



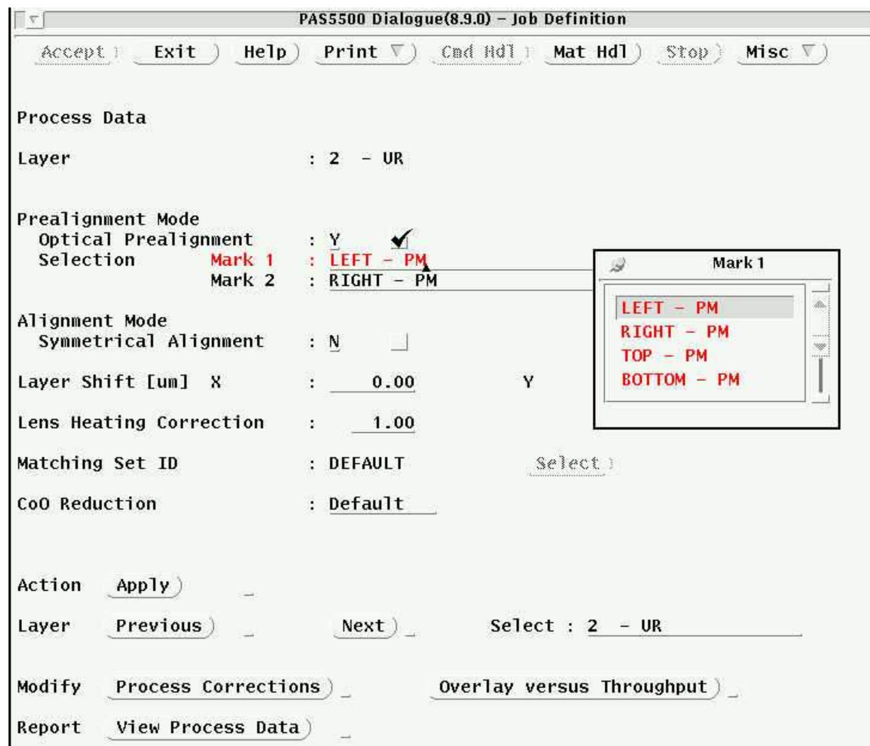
Reticle Alignment Method – verify it is TTL.

At Layer, click Next.

For each layer, select the Alignment Strategy desired from the list, then click Apply.

Click Exit when finished.

Process Data



Optical Prealignment – for each layer, make certain this is selected only if PM Marks will be visible within the dark gray areas shown in the Alignment Definition diagram. Various available mark locations may be selected by clicking on the marks listed.

Combined Mark/Image Exposure (***not recommended***) – check this box to expose PM Marks on the first device layer. See Single Mark instructions.

At Layer, click Next and repeat steps for each layer.

Click Apply, then click Exit when finished.

Reticle Data

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PAS5500 Dialogue(8.9.0) – Job Definition

Accept   Exit   Help   Print   Cmd Hdl   Mat Hdl   Stop   Misc

Reticle Data

Layer                          : 1  – UI
Combined Mark/Image Exposure   : Y

Image ID                       : UL
Expose Image                   : Y
Reticle ID                     : CNF*                  Lens Reduction : 4x

Identical Masking              : Y

Reticle Image [mm]
  Size                    X  :   40.0000     Y  :   40.0000
  Shift                   X  :  -22.000000   Y  :   22.000000

Masking Window [mm]
  Size                    X  :   40.00       Y  :   40.00
  Shift                   X  :  -22.00       Y  :   22.00

Energy           [mJ/cm2] :   22.00
Focus Offset         [um] :    0.00
Focus Tilt Offset [urad]  Rx :   0.0         Ry :   0.0

Illumination Mode         : Default        Default Mode : Conventional

Numerical Aperture        :  0.57
Sigma  Outer              :  0.750

Reticle Data II

Action   Apply

Image    Previous        Next        Select : UL

Layer    Previous        Next        Select : 1  – UL

Report   View Reticle Data


Press F11 to activate Button.
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Indicate which reticle images are to be exposed in each layer.

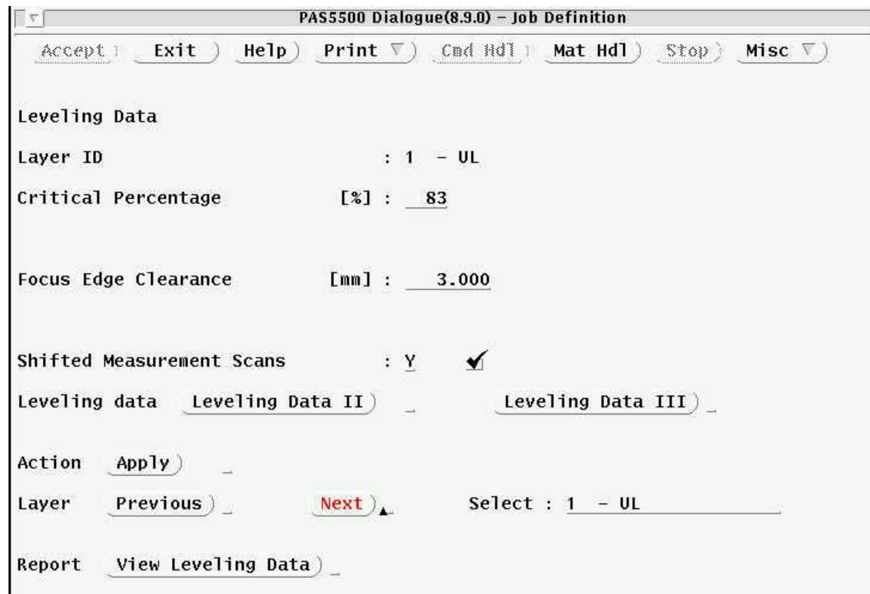
Image – click Next to cycle through ***all*** available Images for ***each*** Layer.

Expose Image – check or uncheck this box for ***each*** Image on ***each*** selected Layer. All Images are ***exposed*** on ***all*** Layers ***by default***.

Layer – click Next to cycle through each Layer.

NOTE: you MUST click Apply to save changes ***before*** cycling to the next Image or Layer.

Leveling Data



Shifted Measurement Scans can improve yield at the edges of the wafer.

Shifted Measurement Scans – for all Layers other than Zero, click the Shifted Measurement Scans box, then click Apply.

At Layer, click Next for the next Layer. Click Exit when finished.

Utilities

Click on Utilities. Copy your file to the [scratch] directory, then Delete the original file in the [jobs] directory.

If you need to make a folder, use your NetID as the folder name.