

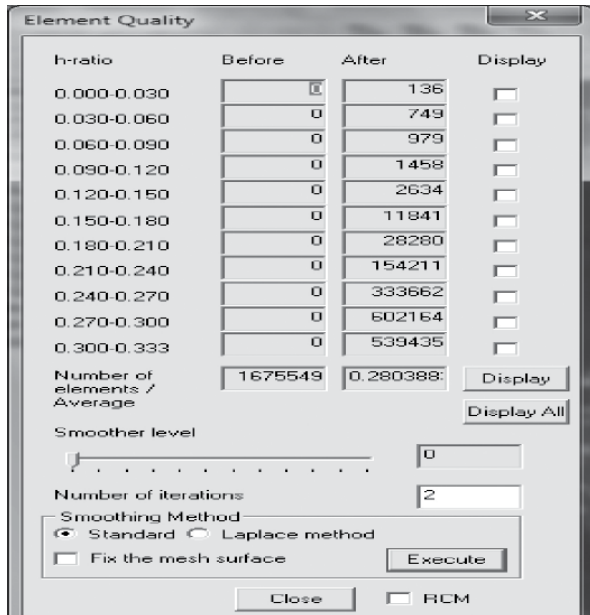


Figure 6. h-ratio quality of Tetra elements.

Vertices and Ridges in Pit Boundary

The white points and lines in Figure 7 indicate the vertices and the ridges. The tetra elements of 0.000 to 0.060 range is only displayed in this figure since all these poor quality elements are formed due to the presence of vertices and ridges. The volume mesher attempts to form a mesh following the important vertices and ridges. This results in an excessive skewedness in some of the tetra elements. The pink colored small features in Figure 7 are examples of poor quality elements.



Figure 7. Poor quality Tetra elements in Pit boundary.

Figure 8 displays some of the elements of very poor quality h-ratio (0.001). The white lines and the points represent the ridges and the vertices associated with formation of these elements.



Figure 8. Enlarged view of poor quality elements.

Prism Layer Insertion and Formation of holes

When prism layers are inserted, the tetra elements shrink and shift away from the boundary to make room for the prism layers. The points of the tetra elements attached to some of the vertices and ridges, however, cannot move. So the prism layers cannot be inserted and holes are developed in the prism layer. Figure 9 shows examples of holes formed in the prism layer at the Pit boundary.

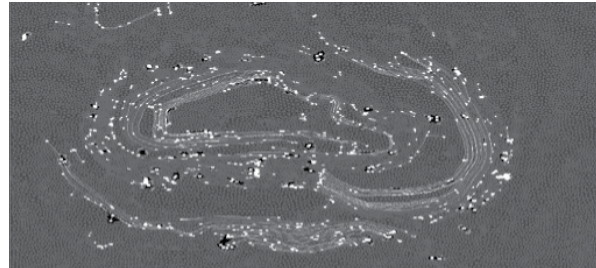


Figure 9. Holes in Pit boundary Prism layers.

Removal of Vertices and Prism Layer Insertion

Figure 10 displays the Pit boundary of the selected pit when the vertices and the ridges are removed. Vertices and ridges can be removed by Merging and Moving Nodes, and Swiping and Splitting Edges. The entire volume is then meshed and the element quality improved significantly. Figure 11 shows the h-ratio of the newly meshed pit; absence of any poor quality element can be observed.



Figure 10. Filtered Pit Boundary, without Vertices and Ridges.

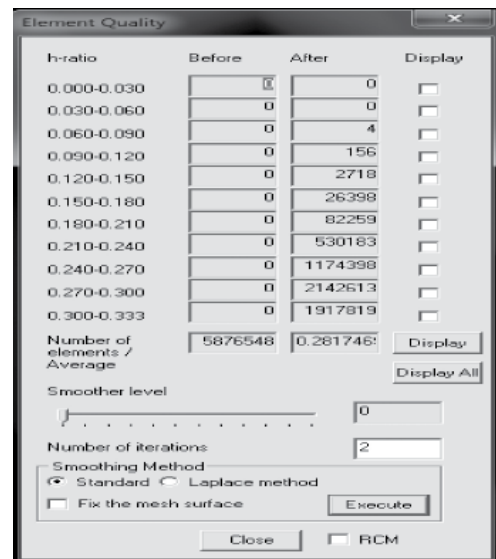


Figure 11. h-ratio quality of Tetra elements in filtered geometry.