Great Table

Specifications

Weight	350 to 450 carats*
Dimensions	59.42 x 33.51 x 13.25 mm**
Color	Pale Pink
Weight of Rough	Unknown; assumed to be semi-polished crystal
Origin	Golconda, India
Date Found	Unknown; probably early 1600’s
Current Location	Cut into the Darya-I-Nur and the Nur-al-Ain in the early 1800’s

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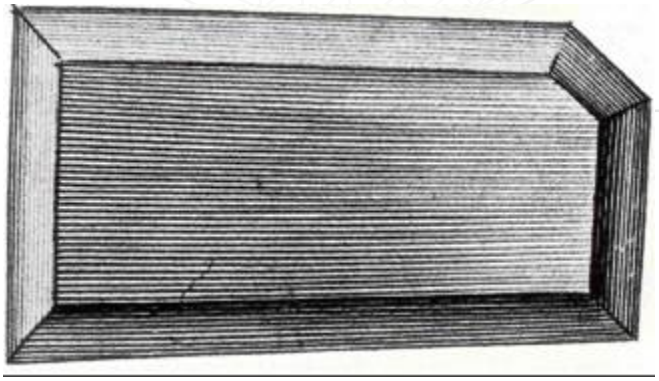
*Per Tavernier, 242 old carats.

**Dimensions derived using GemCad and computer modeling.

Details

The majority of the research for this diamond is taken from a Gem and Gemology article written in 1969 by a trio of Canadian researchers who had a chance to study the Iranian Crown Jewels. It is because of this work that the creation of the Great Table, Darya-I-Nur (DIN), and Nur-Al-Ain (NAA) diamonds was made possible. To get the complete story, go to the Reference tab and look for the article written by V. B. Meen, plus his book The Crown Jewels of Iran. These references recount an excellent piece of detective work to determine the fate of the Great Table, and origins of the DIN and NAA.

The Great Table diamond was first reported by Tavernier in 1642. It is mentioned again by Sir Harford Brydges in 1791, a British diplomat hired by the Shah of Persia to sell some diamonds to raise funds so he could wage war on a neighbor. At this time, Brydges reported that the stone was exactly as Tavernier had described. This is the last known reference to this stone



The Great Table Diamond as drawn by Tavernier

In 1969, three Canadian gemologists went to Iran to inventory the Iranian Crown Jewels. They became interested in two large pink stones, the Darya-I-Nur and

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Nur-Al-Ain diamonds, and noticed that they were virtually the same color and clarity. Being somewhat familiar with ancient diamonds, they wondered if these two stones might not be two pieces of the Great Table. After some in-depth analysis, they concluded that somewhere between 1794 and 1834 the Great Table had been broken into two pieces. The larger of these became the DIN, the smaller the NAA.

The gemologists concluded that the stone was a rough diamond crystal in cubic form, and the small angular side was a dodecahedral face. This greatly aided the modeling, as it now established most of the index settings for cutting the stone. But what angle were the bevel facets? Using the original crystallographic assumptions, these should be at the angle between octahedral faces, or about 54.75 degrees.

Fixing length, width, and depth needed a more in-depth study of the Great Table, DIN, and NAA together. The original discoverers calculated that the Great Table was 56.3 x 29.5 x 12.15 mm, fixing the depth at the measured depth of the DIN. However, they did not have access to computers, so they had to create individual models of each stone and iterate these models to fit the two stones into one. This is a very time-consuming process, and contains inaccuracies inherent in creating the models. Could modern technology yield something a little more precise?

The process involved placing Tavernier's original drawing of the GT into Adobe Illustrator and generating a scalable line drawing. Line drawings of the DIN and NAA were then generated from photographs. Since the dimensions of these two stones are known, their line drawings were fixed to their specified dimensions. To independently verify the previous study, all that needed to be done was to alter the position of the DIN and NAA in Illustrator and adjust the dimensions of the Great Table line drawing accordingly to fit both stones. The goal was to determine the minimum size of the Great Table necessary to accommodate the

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volumes of the other two stones. This was considered the constraint, since it would be reasonable to assume that the largest stones possible would be cut from the two cleaved pieces.

A top down view was generated to determine the overlap of the two stones. Initially, no overlap was assumed. Scaling the GT drawing showed that the size of the GT had to be inordinately large, so it was decided to build on the assumptions of Meen et al that there was some degree of overlap between the DIN and NAA (Figure 1). Since the Great Table was assumed to be dropped and broken, a side view was also generated, with a line representing the cleavage plane (Figure 2). The angle of cleavage was set assuming Meen's assumptions that the GT was a rough diamond crystal exhibiting dodecahedral characteristics. The thickness of the Great Table at this point was fixed to equal the depth of the DIN. Also, the DIN was originally fixed in place so the only variable was placement of the NAA.

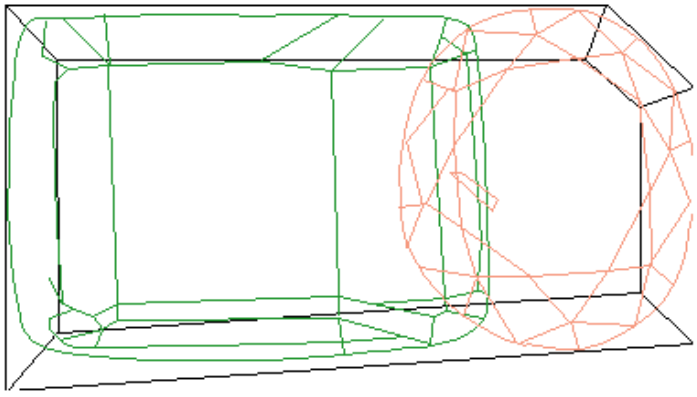

Figure 1

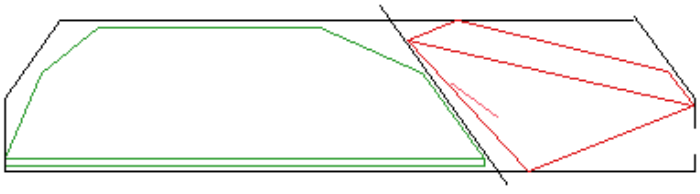

Figure 2

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The drawing of the NAA was rotated and tilted through dozens of iterations to determine placement within the Great Table. It eventually became apparent that the length and width of the Great Table must be increased about 3 mm in length and/or width to accommodate both stones. At this point, the amount of waste during recutting was becoming exorbitant. Rather than increase length and width, increasing stone depth by approximately 1 mm satisfied all variables and seemed reasonable from a stonecutter's perspective. Final dimensions of the Great Table were determined to be 59.42 x 33.51 x 13.25 mm, and the length:width ratio is consistent with Tavernier's drawing.

Figure 3: Replicas of the Great Table (top), and the Darya-I-Nur and Nur-al-Ain (bottom), showing their approximate orientation

Per GemCad, a diamond of these dimensions would weigh 380.38 carats (using an average specific gravity of 3.51 g/cc for diamond). Meen et al estimated the Great Table to weigh 299 carats. The difference between the Meen model and my model is due to size, as he reported the dimensions as 56.3 x 29.5 (at the middle) x 12.15 mm (the density value he used is not recorded). These dimensions are not consistent with the length to width ratio in Tavernier's drawing. Due to the better tools at my disposal, I believe my dimensions to be more accurate, but further research by the part of others might come up with different and better dimensions.

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Tavernier reported the weight as 242 5/16 old carats, or 248 ¾ modern carats. The weight discrepancy with the more modern calculations is discussed by Meen in sufficient detail that it won't be covered here.

Figure 4: Replicas of the Great Table, Darya-I-Nur, and Nur-al-Ain

Where Man-Made Diamond Meets History

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