





# THE UNCLE SAM DIAMOND

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**GIA COLOR GRADE:** M, FAINT BROWN

**GIA CLARITY GRADE:** VVS<sub>2</sub>

**WEIGHT:** 12.42 CT

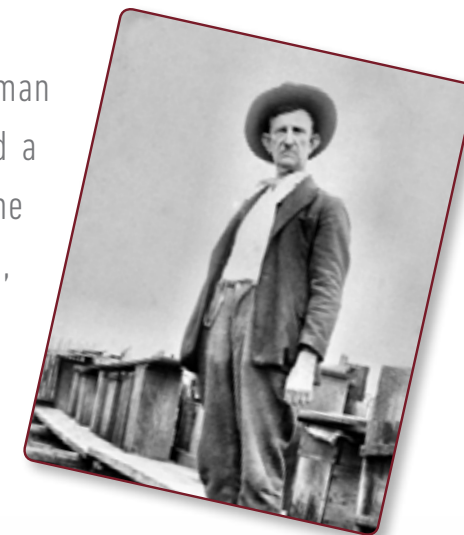
**SHAPE & CUTTING STYLE:** EMERALD CUT

**GIA REPORT NUMBER:** 2205095106



## INTRODUCTION

In 1924, in Murfreesboro, Arkansas a workman for the Arkansas Diamond Company unearthed a 40.23 ct rough diamond. The diamond was named the "Uncle Sam," after the nickname of the workman, Wesley Oley Basham. To this day, the Uncle Sam diamond still holds the record as the largest diamond discovered in the United States.





## THE UNCLE SAM DIAMOND AND THE CRATER OF DIAMONDS STATE PARK

In 1906, John Wesley Huddleston, a farmer and sometimes prospector, found two strange crystals on his farm in Arkansas. Soon, he became known as the first person outside of South Africa to find diamonds at their original source. Huddleston's discovery sparked a diamond rush in Pike County. Diamond-bearing soil was also found on an adjacent property. Prospectors and fortune hunters rushed to the area. The boomtown atmosphere led the aspiring miners to create a tent city near Murfreesboro which they named Kimberly in honor of the famous Kimberley diamond district in South Africa.

Within a few year of the discovery, all of the land on top of Prairie Creek Pipe was in the hands of two rival companies: the Arkansas Diamond Company and the Ozark Diamonds Mines Corporation. The two companies maintained mining operations sporadically over the next forty years but operated under constant financial strain. It was during this time that Uncle Sam made his historic discovery of the 40.23 ct rough, the largest to ever be unearthed, not only from the Prairie Creek Pipe, but in all of the United States.

In 1952 the owners of the rival companies formed a partnership and opened the property to the public as a tourist attraction called the Crater of Diamonds. For a small fee, visitors were allowed to search for diamonds and keep what they found. The venture was a modest success. Well-known diamonds found during this time included the 15.33 ct Star of Arkansas (1956), the 6.42 ct Gary Moore diamond (1990), and the 34.25 ct Star of Murfreesboro (1964). In 1990, a 3.03 ct diamond was found that was later cut into a D-color, flawless diamond, the highest quality diamond ever graded from rough found at Crater of Diamonds.

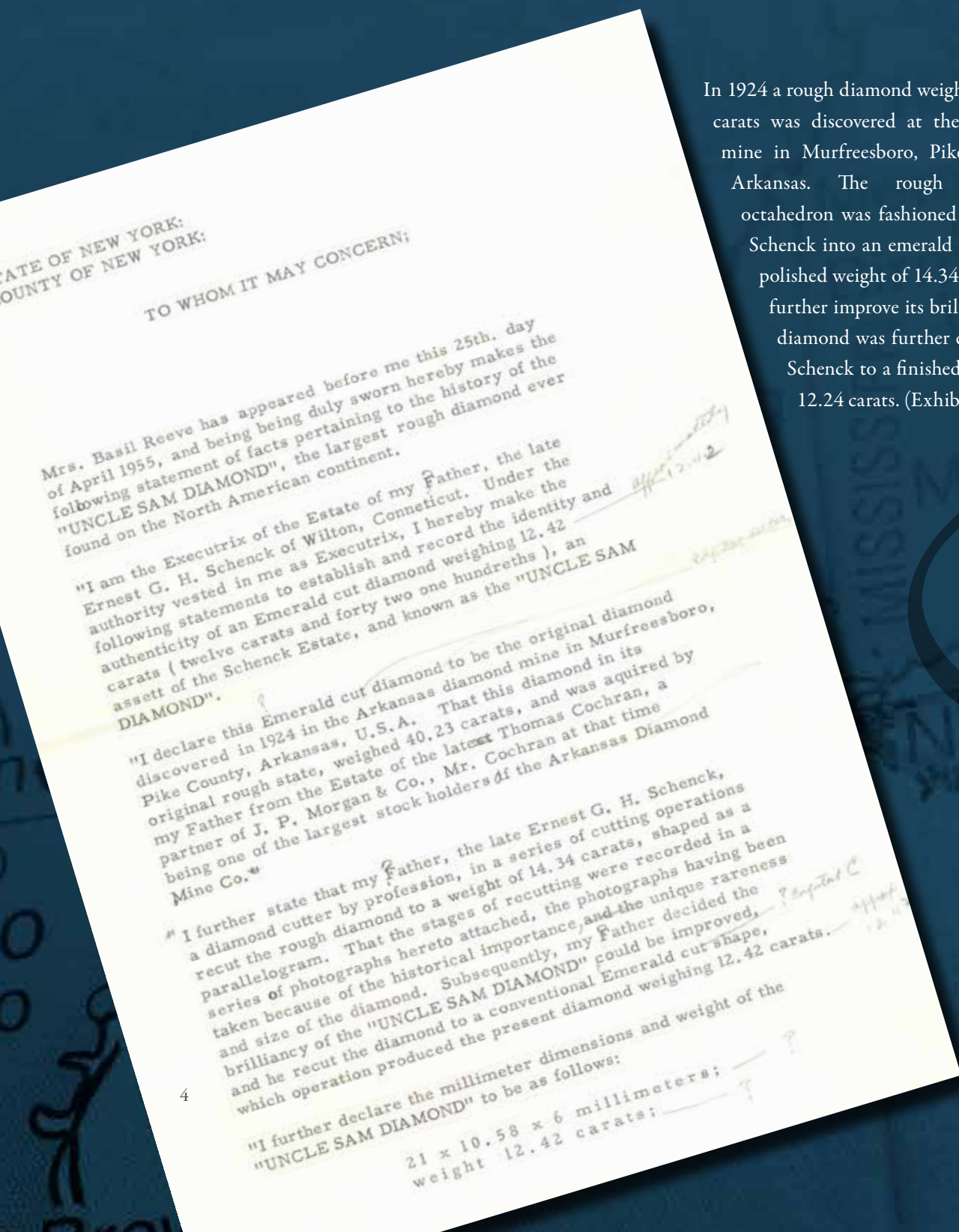
In 1972, the Crater of Diamonds was purchased by the state of Arkansas and established as Crater Diamonds State Park. Each year, the park still hosts thousands of visitors and averages 2 diamonds found, daily.

The Crater of Diamonds volcanic pipe is part of a 95-year-old eroded volcano. Deeply sourced lamproite magma from the upper mantle brought the diamonds to the surface. This lamproite diamond source is unusual, as almost all diamonds are mined from kimberlite and its alluvial deposits. The most prominent lamproite diamond source in the world is the Argyle Diamond Mine in Australia.





## PROVENANCE OF THE UNCLE SAM DIAMOND



In 1924 a rough diamond weighing 40.23 carats was discovered at the diamond mine in Murfreesboro, Pike County, Arkansas. The rough diamond octahedron was fashioned by Ernest Schenck into an emerald cut with a polished weight of 14.34 carats. To further improve its brilliance, the diamond was further cut by Mr. Schenck to a finished weight of 12.24 carats. (Exhibit A)

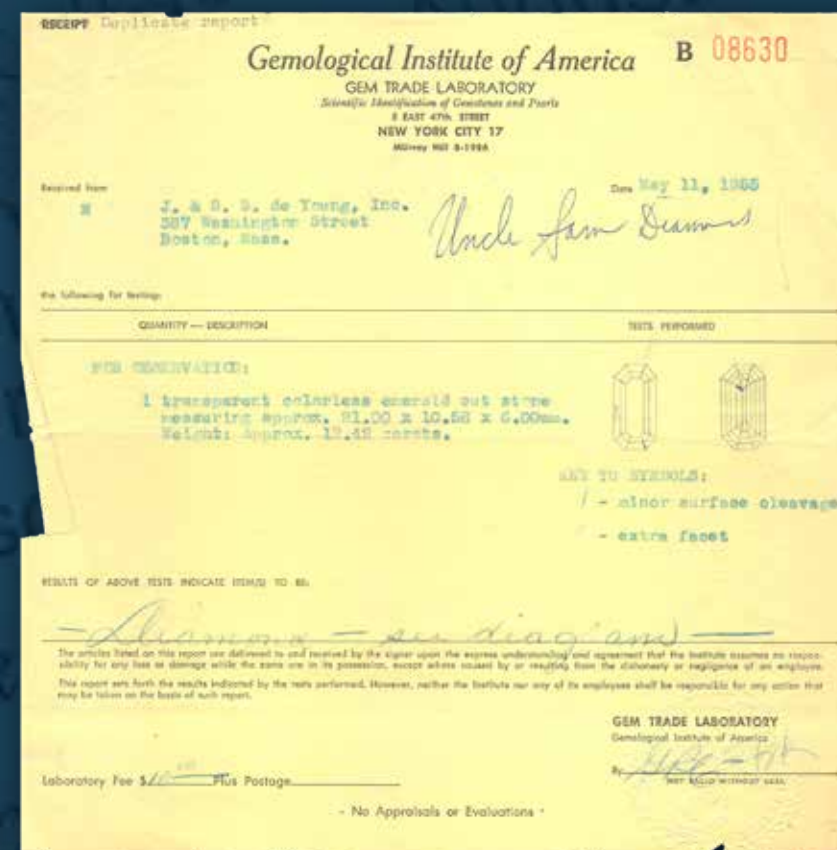


As the largest rough diamond ever discovered in the United States, the diamond came to be known as the "Uncle Sam Diamond." In 1955 it was acquired from an heir of the original cutter by the Boston jeweler S. Sydney DeYoung, principal of J. & S.S. DeYoung, Inc. It was submitted that same year to the Gemological Institute of America for one of their newly offered diamond grading reports. (Exhibit B)

In 1960 Mr. DeYoung sold the diamond to a private party for \$150,000 — a decision he came to regret, as he felt this very special diamond should have been on display for the public to enjoy. On the advice of Mr. DeYoung, the private collector did in fact loan the Uncle Sam diamond to the Smithsonian Institution in 1970, where it was on public exhibition for a year.

In later years, the exact location of the Uncle Sam diamond became unknown for several decades, and a number of avid and interested parties hoped to rediscover its whereabouts. Finally, in early 2019, a representative of the final owner's heir contacted J. & S.S. DeYoung, Inc. (still in business and in its fifth generation of family ownership) because their name was on the original GIA report from 1955. After several negotiations, J. & S.S. DeYoung, Inc. was able to repurchase the Uncle Sam diamond, and thankfully still had retained all the original documents for this historic diamond.

Below, a copy of the original GIA report for the Uncle Sam diamond, with Mr. S. Sydney DeYoung's handwriting.





## OCCURRENCES & GEOGRAPHIC ORIGINS OF DIAMONDS

Since the dawn of written history, these miraculous stones have been revered and coveted. Diamonds represent luxury, finery, and eternity as much today as they did thousands of years ago. As Pliny the Elder wrote in the 1<sup>st</sup> century AD, “Diamond is the most valuable, not only of precious stones, but of all things in this world.”

Historians believe India was the first source of the ancient world’s diamonds. They estimate its rough stones were traded as early as the 4<sup>th</sup> century BC. The limited diamond supply was intended for an equally limited market: the highest and wealthiest castes of Indian society. Members of different castes were permitted to own and wear only diamonds of a specific color, which became a societal badge of rank.

Mines in the Golconda Sultanate became the zenith of quality diamonds. They produced large, colorless stones of extraordinary limpidity and fancy-color diamonds with extraordinary color saturation. Many of the world’s iconic diamonds—the Hope, Koh-i-Noor, Dresden Green, Orloff, and Wittelsbach-Graff, to name a few—were mined there. Golconda’s influence became so widespread that even today the name is associated with the finest diamond quality.

As the trade of Indian diamonds spread to Europe via Venice’s medieval markets in the 1400s, the world’s appetite for the jewel grew. All diamond mines contain a finite number of diamonds and after 2,000 years as the world’s main source, India’s supply began to decline by the 1700s.

Brazil emerged as the next main source in the late 1700s. Artisanal gold miners discovered rough while panning the Jequitinhonha River in the gem-rich state of Minas Gerais. For the following 150 years, Brazil dominated the diamond market.



The discovery of huge deposits of diamonds along the Vaal and Orange rivers in the late 1880s began a rush that drew fortune-seekers from across the globe. Rough diamonds, both small and outstandingly large, were found in shallow overburden and in surprising concentration. Mining claims numbered in the thousands within a few short months.

The South African diamond discovery revolutionized the science and methods of mining. Operations went underground to mine deeper areas of kimberlite pipes. The processing of diamond ore was streamlined and automated. Developments made diamond mining safer. Geologists meticulously collected data on diamond deposits to later predict other deposits worldwide.

Today, major diamond mines are found around the world. Canada, Russia, South Africa, Botswana, Australia, Indonesia, Brazil, and Angola represent major contributors to global diamond production.



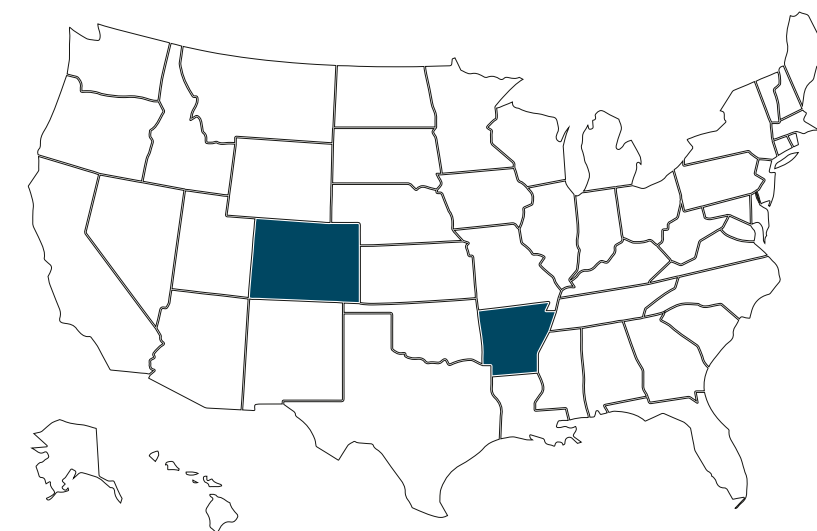


### DIAMOND SOURCES IN THE UNITED STATES

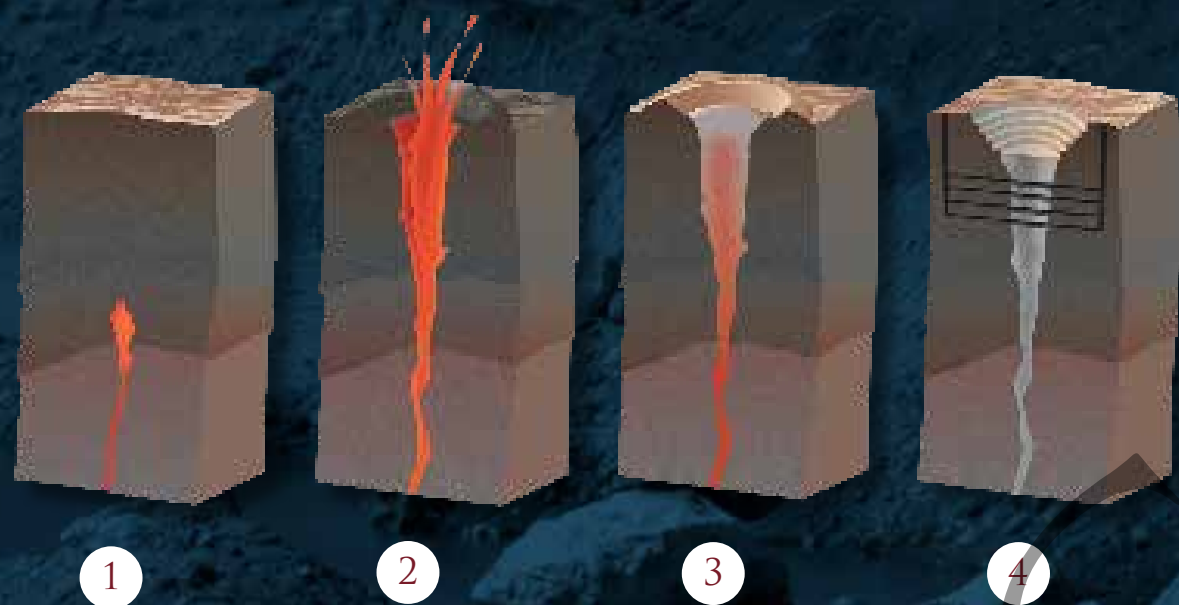
The United States has only ever reported two locations that were worked as commercial diamond mines: the Crater of Diamonds mine in Murfreesboro, Arkansas, and the Kelsey Lake Diamond Mine near Fort Collins, Colorado. Actively, the Crater of Diamonds State Park in Arkansas has produced a few hundred carats of diamonds per year since the early 1970s. It sits upon a lamproite diamond pipe.

The Kelsey Lake Mine consists of nine kimberlite volcanic pipes, two of which were open-pit mined from 1996 to 2002. It closed not due to a lack of diamonds, but rather because of legal problems. The Kelsey Lake Mine produced clear, gem-quality stones with approximately one-third larger than one carat.

The Wyoming Geological Survey also believes that there are hundreds of kimberlite pipes, with similar conditions to those of the Canadian diamond deposits. California has also recovered some diamonds from over two centuries of prospecting for gold. Diamonds have tended to accumulate in the same locations as gold and platinum, but mostly the efforts to locate the diamond host rock have not been successful.



Opposite page top: Crater of Diamonds State Park. bottom: Kelsey Lake Diamond Mine on the Colorado Wyoming border.



1. After formation, diamonds wait underground for millions to billions of years. 2. A dynamic geologic force, known as a kimberlite eruption, transports crystals and their host rocks to the Earth's surface. 3. The eruption results in a diamondiferous crater over an extremely deep pipe. 4. Once a diamond deposit reaches the surface it is many millions of years before it is discovered in order to potentially build a mine.



## DIAMOND FORMATION & GEOLOGY

**D**iamond, the hardest natural mineral on Earth, has the same chemical makeup as graphite—the soft, metallic gray material found in pencil lead. Both materials are made of carbon, but their physical characteristics are vastly different. At high pressures and temperatures deep in the Earth, carbon is stable as diamond, whereas graphite is stable at the conditions on the Earth's surface. Diamonds form in the Earth's upper mantle where temperatures climb to 2192° F (1200° C). Pressures soar to more than one million pounds per square inch. The forces cause carbon atoms to form strong bonds in all directions within a rigid three-dimensional pattern.

The majority of natural diamonds form around 150–200 km beneath the Earth's surface, and reside there for millions to billions of years until rare volcanic eruptions (kimberlites) transport them and their host rocks to the surface. Kimberlite, and a related rock known as lamproite, are the two types of volcanic rocks that can move diamonds from their host rock upward to the surface. This process is extremely fast, turbulent, and explosive, meaning that many diamonds may be fractured during transport. Lower quality diamonds are often destroyed. Although many kimberlites contain diamonds, not all contain sufficient amounts of diamond to be economically viable. It could be decades between discovery of a low grade diamondiferous kimberlite to eventual exploitation once economic conditions are more favorable.



## MANUFACTURE OF THE UNCLE SAM DIAMOND

A rough diamond is in many ways a fascinating specimen. Within it lies a mystery, which could potentially take the form of a spectacular gem. Before its mystery can be revealed, however, it must undergo a series of observations.

The exterior of a rough diamond contains several clues about the gem within. Every crystal is different, as each is the product of a distinctive growth history. The unique formations of diamond crystals during geological processes attest to the power of the natural world. But once nature has run its course and a diamond emerges onto the earth's surface, it becomes man's responsibility to uncover its striking, innermost qualities. When placed into the hands of a skilled cutter, the intrinsic beauty of a diamond has the potential to be realized.

Before the actual cutting begins, planners apply their knowledge about diamond's crystal structure to make critical cutting decisions. Establishing the rough diamond's crystal direction is the crucial first step, as one must understand the rough's crystal structure in order to mark it properly for cutting. An incorrect marking can result in a less profitable yield, or in the worst cases, shattered rough. Planners can use their technical knowledge to visualize crystal structure, even when the rough's outward form doesn't make it obvious. A planner must balance the predicted, potential clarity of a finished gem against the maximum weight obtainable from the rough.

The right combination of experience, skill, and creative vision will result in a polished diamond that reveals the utmost display of brightness, fire, and scintillation. Although the traditional round brilliant cut, the dominant cutting style in today's market, has been statistically proven to produce an optimal display of these optical properties (when executed to precise proportions), several other more innovative and unique styles also give way to very attractive finished gems.



Interestingly, the current appearance of a diamond may indeed reveal much about its past. The Uncle Sam diamond was manufactured as an emerald cut. Emerald cuts are typically fashioned from elongated pieces of rough, and are rectangular in shape with parallel rows of facets. The emerald cut has long been considered one of the most popular varieties of the step cut. Step cuts are characterized by long, sleek lines and a subtle glimmer. They first came about in the 1400s, long before the development of the brilliant cut. In fact, the first diamond cut—the table cut—was a step cut.

Many admire the traditional outlines and understated elegance of a step cut. Most step cuts, like that of the Uncle Sam diamond, have a large table facet, which demands a particularly high standard of clarity from the rough. In a brilliant cut, for example, the flash from the facets can mask some inclusions, or imperfections. The emerald cut allows the viewer to focus on the pure beauty of a gem. The relatively large size of its table enables one to readily see deep into the heart of the stone. The cut lends the appearance of a reflecting pool, with a gleam that is distinctly different from brilliant-cut styles. With its sleek lines and clean geometry, an emerald cut is often the choice of the modern customer who seeks a bold, yet refined style for their diamond. With a unique yet classic look, the emerald cut is the ideal complement to the Uncle Sam diamond's high clarity.





## A SYSTEM FOR GRADING DIAMOND COLOR

**G**IA's D-Z color grading system was specifically designed for colorless-to-light yellow diamonds, but it proved readily adaptable to include near-colorless to light brown diamonds as well.

As the GIA color grading system was refined over the years, modifications were made to accommodate those brown and gray faceted diamonds that could be considered equivalent to grades between "K" and "Z". For brown stones, a letter grade plus word description of Faint, Very Light, and Light brown are used for the grade ranges of K-M, N-R, and S-Z, respectively. These "champagne diamonds" (as they are commonly referred to in the trade) have not only increased in popularity, but also heightened consumer awareness of this unique classification of stones within color space.

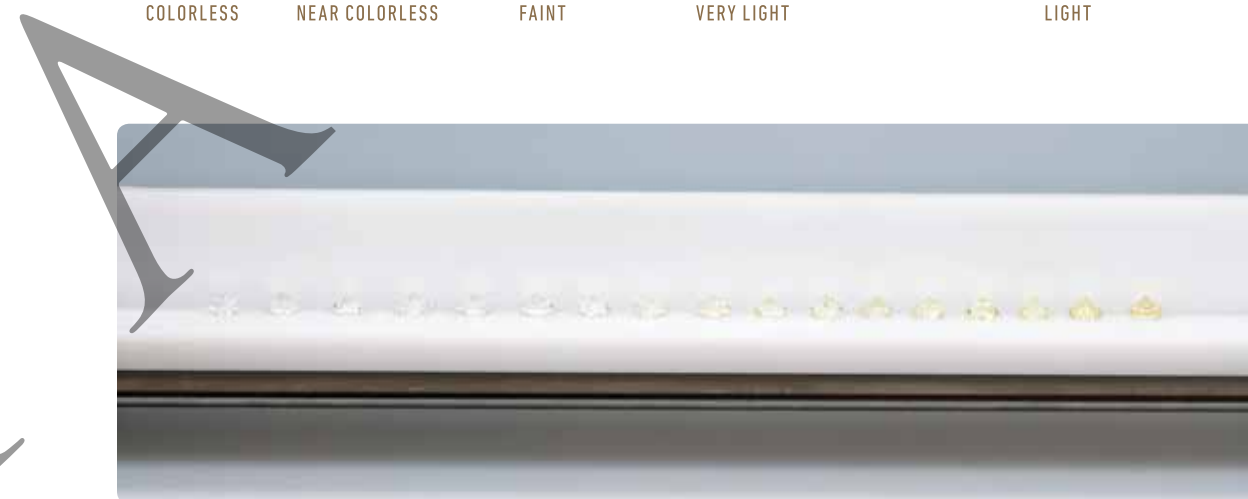
### GIA D-TO-Z COLOR GRADING: AN OVERVIEW

D-to-Z color grading is based on the visual observation of trained GIA Laboratory personnel who compare a diamond to master stones of known position on the grading scale. To achieve repeatable results, graders use a standard light source and a controlled viewing environment. The diamonds are placed table-down in a grooved, matte-white, non-fluorescent plastic tray within this environment—a viewing box that eliminates visual distractions and shields external light. GIA also uses a standard geometry between the diamond, the light source, and the observer. The light source is positioned directly over the diamond, and the observer views it approximately perpendicular to the pavilion facets. Working within these parameters, GIA graders describe the overall blend of appearances (excluding surface reflections, dispersion, and other visual effects related to the cutting of the diamond). GIA's letter grades for this minimally incremental color in a diamond represent a narrow range of appearances rather than one single sensation. The Uncle Sam diamond received a GIA color grade of M, Faint brown.



## GIA COLOR SCALE

D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
COLORLESS			NEAR COLORLESS			FAINT			VERY LIGHT			LIGHT										





## GEMOLOGICAL EXAMINATION

In gemology, clarity refers to the presence or absence of internal and surface-reaching characteristics, which might affect a diamond's face-up appearance and durability. The GIA Clarity Scale reflects the relative size, nature, number, relief, and position of internal and surface characteristics that are visible at 10× magnification.

The clarity scale begins with those rare diamonds in which no internal or surface-reaching features can be observed at the standard magnification: Flawless (FL). It then transitions to another set of rare diamonds, in which no internal features can be seen at standard magnification: Internally Flawless (IF). It then transitions to diamonds that are Very, Very Slightly Included (VVS), Very Slightly Included (VS), Slightly Included (SI), and Included (I).

GIA CLARITY SCALE	
	FLAWLESS
	INTERNALLY FLAWLESS
VERY VERY SLIGHTLY INCLUDED	VVS <sub>1</sub>
	VVS <sub>2</sub>
VERY SLIGHTLY INCLUDED	VS <sub>1</sub>
	VS <sub>2</sub>
SLIGHTLY INCLUDED	SI <sub>1</sub>
	SI <sub>2</sub>
INCLUDED	I <sub>1</sub>
	I <sub>2</sub>
	I <sub>3</sub>



## CLARITY CHARACTERISTICS OF THE UNCLE SAM DIAMOND



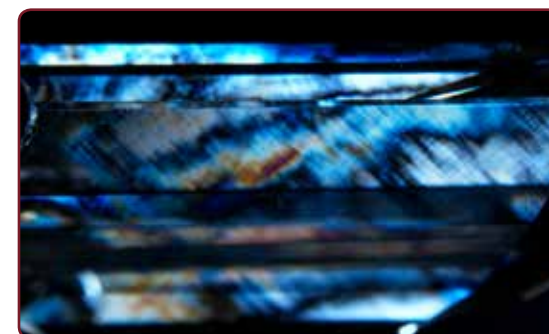
Gemological observations of internal and surface characteristics revealed a number of internal and surface-reaching characteristics. One of the features noted within the diamond were feathers. A feather is any break in a gemstone that takes a white or “feathery” appearance. Some bruises were also noted. A bruise is a tiny area of impact accompanied by very small, root-like feathers. Additionally, the surfaces of the diamond showed normal signs of wear which likely resulted from handling over the years. After microscopic gemological observation, the Uncle Sam diamond was ultimately graded a clarity of VVS<sub>2</sub>.

*A minute feather, a surface-reaching inclusion, is seen here on a crown step of the Uncle Sam diamond.*

## STRAIN

Diamonds bear evidence of their intense environmental conditions underground during formation and transport to the earth's surface. These forces can cause strain on the diamond's atomic lattice. Evidence of such strain may be revealed when the diamond is examined between two polarizing filters with polarizing directions oriented at right angles to one another. If strain had occurred, a banded or crosshatched pattern of (typically) bright interference colors will be visible.

The strain pattern observed by GIA staff under cross-polarized light with high interference colors is evidence of strong internal stresses during natural diamond formation.

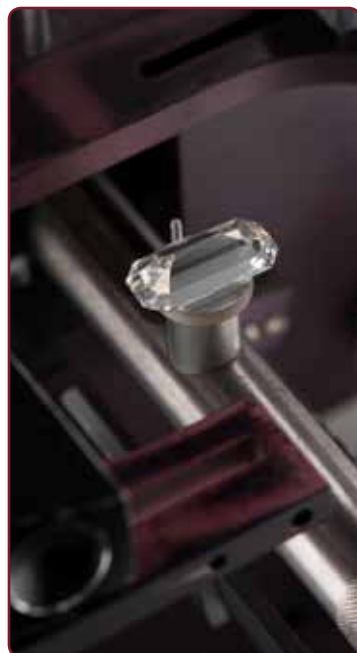




## ADVANCED ANALYTICAL TECHNIQUES

Spectroscopy is the study of matter’s interaction with electromagnetic radiation, for example ultraviolet (UV) light or visible light. Electromagnetic radiation propagates as waves, and like waves in the ocean, high energy waves (e.g., UV, X-rays, gamma rays) have shorter wavelengths (such as UV between 1 nm to 380 nm) and move faster. Lower energy waves (e.g., infrared and radio waves) have longer wavelengths (such as IR between 780 nm to 1 mm) and have slower wavespeeds.

Spectrometers are sensitive instruments that can measure the intensity of transmitted or emitted light at individual wavelengths in different areas of the electromagnetic spectrum. Scientists use several spectroscopic methods because each probes a diamond’s story from a different angle. Infrared spectroscopy can detect certain trace elements that are present in the diamond lattice (for instance, nitrogen, boron, and hydrogen).



Diamond color is due to defects in the crystal lattice that are indiscernible to the unaided human eye, but can only be detected through spectroscopic analyses. Only those defects that cause absorption in the visible range of the electromagnetic spectrum influence the color of an object such as diamond. Visible absorption spectroscopy provides a graphical representation of light absorption and transmission that correlates with the color perceived with the eye. Through visible absorption spectroscopy, the specific defects that are responsible for the color in a diamond can be determined, and whether they occur naturally or were introduced through treatment.

Many other defects may also be present in diamond, either outside the visible range or at concentrations that are too low to be detected by visible absorption spectroscopy. Photoluminescence spectroscopy provides an extremely sensitive way of detecting these defects. This combination of spectroscopic methods provides essential information about a diamond’s color and history, and whether it is natural, man-made or treated.



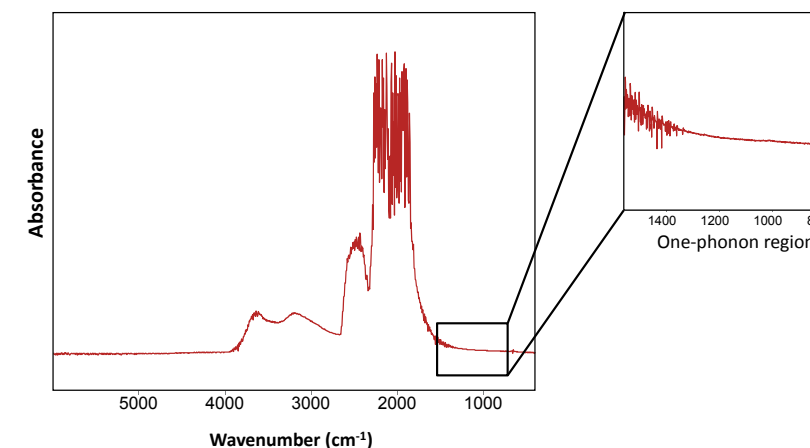
## ANALYSIS OF DIAMOND TYPE & INFRARED SPECTRUM

The hypothetical “perfect” diamond would have a crystal structure consisting of solely carbon atoms that are neatly arranged in an evenly spaced lattice. However, most diamonds contain structural variations and chemical substitutions that affect their physical properties.

Scientists classify diamonds into two main “types,” I and II, based on the presence or absence of nitrogen. The nitrogen content of a diamond is determined using infrared (IR) absorption spectroscopy. Type I diamonds are by far the most common, accounting for >98% of all diamonds. They contain an IR-detectible concentration of nitrogen and can further be subdivided into two groups (Ia and Ib) based on how the nitrogen is arranged in the crystal lattice. Diamonds with aggregated nitrogen (pairs of nitrogen atoms or four nitrogen atoms surrounding a vacancy in the atomic structure) are classified as type Ia. Diamonds containing nitrogen as single atoms in the structure are classified as type Ib.

Type II diamonds are extremely rare (around 1.3% of all diamonds) since they are more atomically pure. They contain no IR-detectible nitrogen in their chemical structure. Type II can also be subdivided into two groups. Type IIa diamonds have no nitrogen or boron impurities; type IIb diamonds also have no nitrogen, but they contain a low concentration of boron, which often imparts a blue bodycolor to the diamond.

The Mid-IR spectrum of the Uncle Sam diamond shows no absorption in the one-phonon region (1400-800cm<sup>-1</sup>) which indicates it is a type IIa diamond. It is considered a very pure diamond with no detectable nitrogen impurity.



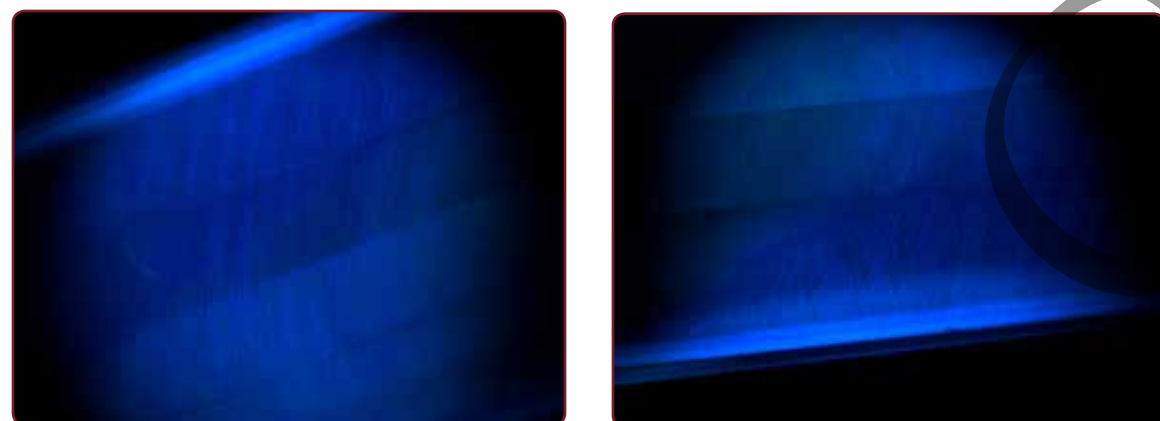


## FLUORESCENCE & GROWTH SECTOR STUDY

Some diamonds emit visible light—called fluorescence—when exposed to ultraviolet (UV) radiation. The emission lasts as long as the diamond is exposed to the UV light source. On a GIA Diamond Grading Report, fluorescence refers to the strength, or intensity, of the diamond’s reaction to long-wave UV radiation, which is an essential component of daylight. Gemologists note fluorescence as an identifying feature. More than 98% of all diamonds exhibit fluorescence as a blue glow; in rare cases the reaction is yellow, white, or another color. The Uncle Sam diamond exhibited no fluorescence under a long-wave light source.

Gemologists use another method of confirming a diamond’s natural origin. The DiamondView™ is a deep-ultraviolet luminescence imaging system that produces two-dimensional representations of diamond fluorescence in real time. The UV light produced by the DiamondView™ has a much higher energy than conventional UV lights used for routine gemological work. It allows gemologists to analyze a diamond’s growth characteristics which manifest as distinct fluorescence patterns. A natural diamond will display a much different fluorescent growth pattern than a synthetic diamond.

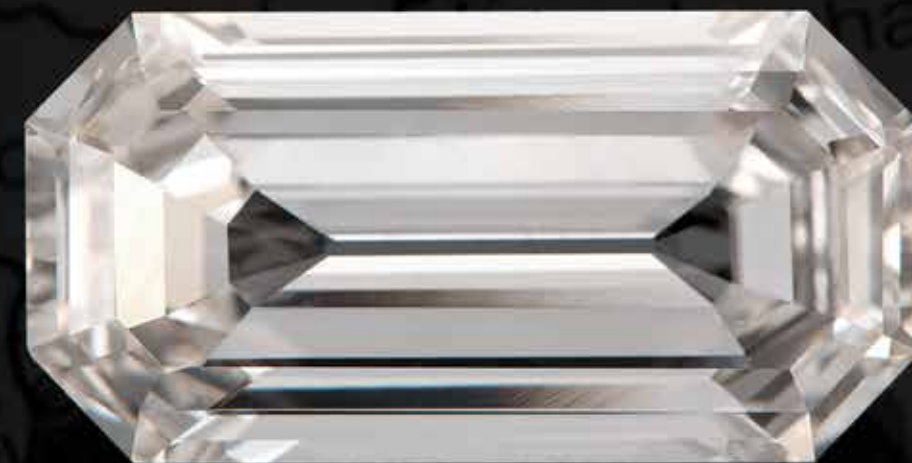
When imaged in the DiamondView™, the Uncle Sam diamond displayed the typical blue color observed in type IIa diamonds. Natural growth patterns were also observed.



## SUMMARY

Every diamond extracted from the earth was formed under exacting conditions in a chaotic setting. While all diamonds are rare, only a few large crystals that form in nature’s uncontrolled environment survive the journey to the surface. The 40.23 ct rough diamond found in Murfreesboro, Arkansas holds the distinction of being the largest rough diamond discovered in the United States.

Every gemstone has a story—a story of its discovery, creation, and place in history. From its unearthing in the fields of the Prairie Creek Pipe, to its discovery by “Uncle Sam,” to its passing-down through generations of owners, the Uncle Sam diamond will always have a special place in the history of the United States.



**ABOUT GIA.** Established in 1931, the Gemological Institute of America is the world’s foremost authority on diamonds, colored stones, and pearls. A public benefit, nonprofit institute, GIA is the leading source of knowledge, standards, and education in gems and jewelry. GIA’s mission is to ensure the public trust in gems and jewelry by upholding the highest standards of integrity, academics, science, and professionalism through education, research, laboratory services, and instrument development. Visit [www.gia.edu](http://www.gia.edu)

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