

*the
New Mexico*

faceter

May/June, 2006



The Official Newsletter of the New Mexico Faceters Guild

NMFG

Show and Tell



Two wonderful stones in Oro Verde citrine by Nancy Attaway.



Australian chrysoprase with purple catseye scapolite pendant by Steve Attaway.

8-carat cushion cut square aquamarine by Ernie Hawes in his "Merrill's Inspiration" cut.



The New Mexico Faceters Guild

Guild Officers 2006-2007

President: Dylan Houtman
Vice President/Programs: Ernie Hawes
Secretary/Treasurer: Betty Annis
Guild Gemologist: Edna Anthony
Guild Mineralogist: Paul Hlava
Workshop Chairman: Ernie Hawes

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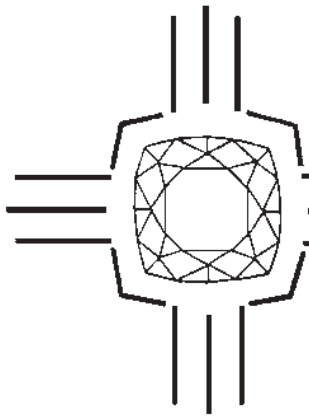
Newsletter Production:
Ernie Hawes

Purpose of the Guild: The purpose of the New Mexico Faceters' Guild is to bring together persons who are interested in faceting and to showcase faceted stones. We promote the art and science of faceting and provide a means of education and improvement in faceting skills. Finally, we provide a means of communication between those persons involved in or interested in faceting as a hobby.

Guild Membership: Dues are \$20.00 per calendar year (January through December) for newsletter issues sent by e-mail. Hard copies of newsletter issues sent by US mail are \$30. Please see the membership application/renewal form on the last page of the newsletter.

Meetings: The Guild meets now on the second Monday of odd numbered months at 7:00 p.m. at the New Mexico Museum of Natural History, 1801 Mountain Road N.W., Albuquerque, NM. Workshops are generally held in even-numbered months. Date, time, and place are given in newsletter. Also, any change in guild meeting times or dates will be listed in the newsletter.

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The New Mexico Facetor

Volume 26, No. 3, May/June, 2006



NMFG President Dylan Houtman

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New Mexico Faceters Guild Official Website

We invite everyone to visit our website at: www.attawaygems.com/NMFG for interesting and informative articles on gemstones and faceting techniques.

The Prez Sez:

by Dylan Houtman

Hello,

I was reminded, reading the Nov.-Dec. newsletter, that some want me to put down my experiences with heat-treating gemstones. Most of my information is derived from the revised and expanded edition of *Gemstones of the World*, by Walter Schumann, published by Sterling Publishing Co. Inc.

With regard to crystals, one thing to pay attention to is that they all are sensitive to thermal shock; in other words, sudden changes in temperature will cause them to fracture. I have a burn-out kiln I use when I heat the gems I wish to treat. It is good at slowly heating up and is well insulated which helps to gently cool down to room temperature. I prefer to use a casting flask to insulate the stones from the heating coils in the kiln; I have heard that some people use sand. I'm sure that there are quite a variety of ways one could devise to protect the stones.

I have only heat-treated two kinds of stones: Tanzanite, fairly sensitive to thermal shock, need only be heated to about 750 to 930 °F (400-500 °C), and zircon, which needs to be heated to quite a high temperature, about 1470 to 1830 °F (800 to 1000 °C).

The color change for these two stones can be quite dramatic. Drab brown tanzanite becomes an awesome blue-purple with a beautiful red flash. Zircon that is too dark brown to see into, can turn to a beautiful yellow or orange. I understand it also will turn blue, but I have never had any zircon do that for me.

The important thing to do is *very* slowly heat and cool your kiln to and from these temperatures. If you become impatient you may well ruin your material. It usually takes me a full 12 hours for each heat.

[continued on page 4]

You should also be able to heat your own aquamarine, and maybe other beryls, to 725-850 °F(400 to 450 °C). This might chase away some of the green or darken a lighter aquamarine, but I have never done this myself. I did try to heat-treat some kornerupine, as the coloring agent is iron (like aqua). I hoped it would turn blue, like some of the rarer kornerupines. I tried a gradually increasing range of temperatures until I ruined my piece of rough, so be careful when you choose to experiment.

I have enjoyed playing with heat-treatments, I think seeing the results by your own hand are more fulfilling than sending the stones away for someone else to treat.

Enjoy all facets of life,
Dylan.



Minutes of the NMFG Meeting

May 8 2006

by Nancy L. Attaway

President **Dylan Houtman** called the meeting to order at 7:15pm and welcomed everyone to the meeting.

Old Business:

Treasurer **Betty Annis** announced that 2006 NMFG dues were due and members may submit or mail checks to her.

New Business:

Ernie Hawes reported the death of Guild member **Herb Traulsen**, who died in early April. **Nancy Attaway** reported the death of former Guild member **Russ Spiering**, who died in late March.

Ernie Hawes reported on the most recent Guild Workshop held at the home of Steve and Nancy Attaway on April 29, 2006.

The next Guild Workshop is scheduled for June 24 at the home of Dylan Houtman.

Ernie Hawes announced that the New Mexico Faceters Guild was founded on May 8, 1981, so tonight we were celebrating the New Mexico Faceters Guild's 25th anniversary. Ernie said that the first meeting of the New Mexico Faceters Guild was held at the home of Louie Natonek. Ernie remarked that the first newsletter was merely a postcard and quickly grew from that to a bulletin with several pages. Happy Birthday to us!

Nancy Attaway mentioned the dig invitation to the Dust Devil mine site in mid July.

Refreshments:

Dylan Houtman brought a cheesecake sampler, **Linda Vayna** brought a veggie tray, and **Nancy Attaway** baked a chocolate-cherry cake. Gourmet coffee was also served. Thank you very much. Linda Vayna, Deb Owen, and Nancy Attaway volunteered to bring refreshments to the meeting in July.

Show and Tell:

The Owen family, father **Wes** and son **John**, displayed many gems that they recently fashioned. John also displayed some of the first sterling silver jewelry pieces that he cast. **Wes Owen** displayed a purple cubic zirconia round, two round Arizona peridots, and a round Apache tear obsidian from New Mexico. John displayed a sterling silver cuff bracelet set with an oval turquoise that he had cabbed, plus two sterling silver rings set with turquoise stones that he cabbed. John showed four sterling silver pendants, two set with sharks teeth and two set with Baja turquoise. He also showed four pairs of sterling silver earrings, one pair set with Baja abalone shell dangles, two pairs of studs set with faceted round Apache tears cut by Wes, and one pair set with synthetic opal, coral, and jet inlay dangles.



Program Speaker

Paul Hlava

Dylan Houtman displayed twelve gems that he recently cut. He showed a white sapphire triangle, a small square Zambian emerald, a large dark pink tourmaline "Montringle" cushion cut triangle, and a modified radiant square dark pink tourmaline. He showed a large pearshape tanzanite that he said broke during heating. He remarked that he will re-cut the gem, possibly into a marquise shape. He showed a gorgeous radiant emerald cut zircon that exhibited a pink champagne hue. He also showed a small SRB ruby, a square dark orange spessartite garnet, a square orange spessartite garnet, a large triangular light blue topaz, a small emerald cut Brazilian emerald, and a round Nigerian blue sapphire.

Nancy Attaway displayed nine stones that she recently cut. She showed a large emerald cut citrine, a Flasher cut round bright green Arizona peridot, a Flasher Cut round dark hot pink Nigerian tourmaline, three small oval sapphires, and an oval clear Arkansas quartz. Nancy showed a long and skinny reddish Nigerian tourmaline and a large light blue long and thin Brazilian aquamarine that she had faceted in a new design that utilized very few pavilion facets, notably two pavilion main facets of 96 and 48 that were cut at 50 degrees. She remarked that these main facets cut at 50 degrees were inspired by famed award-winning jeweler and gemcarver **Dalan Hargrave**, who had recommended it. The directions for this cut will appear in the next issue of the New Mexico Facetor.

Steve Attaway displayed nine chrysoprase cabochons that he recently fashioned. He showed one triangle, one kite shape, three ovals, and four rounds. Steve assisted **Betty Annis** and **Elaine Price** with cabbing their first gemstones in chrysoprase, during the last Guild Workshop.

In the previous issue we discussed the first three of five categories identified by Kurt Nassau as the sources of color in gemstones. In this newsletter we will describe the last two categories.

D) Energy Band Theory and Color Centers

While, in the previous two categories (crystal field and molecular orbital theories), the color was produced by electrons belonging to ions, defect sites or groups of atoms, in the energy band theory these electrons are considered to be part of the whole crystal.

The energy band theory (or band gap mechanism) contains four subgroups: conductors, semiconductors, doped semiconductors and color centers. Color centers are a special case, and could also be listed in the field effect category.

In conductors (metals and alloys, such as gold, iron or brass), the electrons on the outer atomic shell belong to a common pool for the whole crystal, and are thus free to move within this crystal (some restrictions occur). This basically free movement throughout the crystal is what gives metals their excellent electrical and thermal conductivities. While the electrons are free to move, their allowable energy states are confined by wide bands and specific density states within these bands. Incident light is fully absorbed, as each wavelength can excite the electrons within the energy band into different density states. The electrons immediately fall back into their original state and re-emit light upon this de-excitation. The specific energy states available for excitation and de-excitation vary for each metal and alloy and thus give each metal its specific color and luster.

In semiconductors a band gap exists between two separate energy bands. The valence band, the lower energy band of the two, is completely filled with electrons, while the upper energy band, the conduction

band, is devoid of electrons. To excite an electron from the valence band into the conduction band, it needs to traverse the band gap separating the two bands. Semiconductors cannot conduct electricity unless electrons are excited into the valence band; the size of the band gap determines the amount of energy it takes for this to occur. In materials where this band gap is smaller than the energy associated with the visible light range (also called narrow band gap semiconductors) all light is absorbed, as it is very easy to excite electrons into the conduction band. Such materials are often dark grey to black in color, as in galena (PbS), but when electrons drop back to a lower energy state, they can re-emit light and the material will have some color associated with it (e.g. pyrite). If the band gap is of a size within the visible light spectrum, specific wavelength will be able to excite electrons into the conduction band. In this case these specific wavelengths, or colors, are absorbed and only the remaining wavelengths are visible to the observer (cinnabar, sulfur). Finally, if the band gap is larger than the energy of visible light, no wavelength in the visible spectrum is able to excite electrons into the conduction band. This no colors are absorbed and these wide band gap materials appear colorless (pure diamond, sphalerite and zincite).

When impurities, or dopants, are added to semiconductors, intermediate energy states are present within the band gap. These dopants may act as a stepping-stone for electrons moving between the valence and conduction bands. If the energy required for this to occur is within the visible light range, specific wavelengths are absorbed and color is produced.

While we just learned that some materials, such as pure diamond, are colorless because their band gap is larger than the visible light range, we all know that diamond is often not colorless. A typical impurity is nitrogen, which has one extra electron in its outer shell when compared to carbon. This one extra electron exists at an energy state in the bottom quarter of the diamond band gap. Only violet light has enough energy to excite this electron into the conduction band, and as a result the diamond ap-

pears yellow. It takes about 10 nitrogen atoms for every million carbon atoms to produce a deep yellow diamond. Another common impurity in diamond is boron. Boron has one electron less than carbon and offers an empty state that can be taken up by one of the carbon electrons (also called acceptor dopant, or electron hole). For boron this empty energy state is only slightly above the valence band, and it takes only low energies to excite valence band electrons into this state. Diamond with as few as a single boron atom for every million carbon atoms creates blue diamonds, such as the hope diamond. Because this specific energy state is so close to the valence band, electrons can even be excited into it from the thermal energy present at room temperature, thus making this type of blue diamond electrically conductive at room temperature. The blue color created by irradiating diamond is created by a different mechanism (color centers) and irradiated blue diamonds are not electrically conductive. For the yellow diamonds discussed above, the gap between the nitrogen state and the conduction band is too wide for the nitrogen doped diamond to be electrically conductive, as room temperature does not provide enough thermal energy to excite electrons into the conduction band. This makes the distinction between doped and irradiated yellow diamonds more difficult.

Color Centers, also known as “farbe” (German for color) or “F” centers, are formed when atoms are oxidized, translated, or removed, usually by radiation, from their normal position in the crystal structure. The resulting hole may be filled by an electron from a neighboring atom. Any unpaired electrons left behind can now be excited and absorb light. Many color centers are unstable and can be destroyed by heat or strong light, such as ultraviolet light.

Many of the colored varieties of quartz (pure SiO_2) are caused by contaminant elements such as Al and Fe. The colors seen in smoky quartz occur when: an electron in an O atom next to an Al atom is knocked out of orbit by radiation and the unpaired electron left behind in the O site can now absorb

light and get excited into higher energy orbitals. Fe^{3+} should cause quartz to be yellow but the color is changed to amethyst when 1) the Fe^{3+} is oxidized by irradiation to the Fe^{4+} state, 2) then there is charge transfer of an electron from an adjacent O to the Fe^{4+} turning it back to the more stable Fe^{3+} , and therefore, 3) the unpaired electron in the O can now absorb some colors and leave behind the purple which we see. Green diamonds can occur when C atoms are lost from the crystal lattice due to irradiation: One of the adjacent carbon atoms may lose an electron to the vacancy in the crystal lattice; the remaining unpaired electron is unstable and can absorb light energy to produce color. Color centers for topaz produce blue and brown colors. These result from two different and unknown color center processes. The brown color in topaz is unstable. The unstable color of Maxixe beryl is related to carbonate radicals in the crystallographic tubes. Amazonite occurs when Pb^{2-} and OH^- are present in microcline feldspar.

E) Geometrical and Physical Optics

There are four basic mechanisms through which crystals can interact physically with incident light waves to create colors. No electrons are involved in these color mechanisms.

In the atmosphere, liquids and solids, color can be produced through **scattering**. Scattering of light is caused by small particles: dust, molecules, clusters of molecules, random collisions of gas molecules, tiny fat globules, and suspensions. Blue light is scattered more than red light. This scattering is also known as the Rayleigh effect. Lord Rayleigh described scattering of blue and red light by a formula where the intensity of light scattered divided by the intensity of the original light is equal to some constant divided by the wavelength of that light to the 4th power. Using this equation we calculate that if the intensity of blue light scattering is set to 100 the red light scattering in the same situation is only 10.7. Scattering of light in our atmosphere by very tiny dust particles, random collisions of air molecules, even small density gradients causes the

sky to be blue. The sun appears red as it goes toward the horizon because the blue has been scattered out. As particles become larger, they scatter other colors better and these colors join with the blue until the color fades to the pure white of clouds, fog, mist, bull quartz, etc.

Examples of scattering effects in gemstones include: the milky color of opal (opalescence), ; moonstones, and quartz; cat's eye stones and star stones.

Note: Authorities in the field (Dana, Nassau, Downing, etc.) state that opalescence refers only to the milkiness of stones and not their iridescence (rainbow color), which is discussed under interference effects, below.

Chatoyancy is an optical effect displayed by certain gemstones cut 'en cabochon'. Very narrow linear features (such as needles, inclusions and planes) in the stones scatter light in a plane perpendicular to their length, producing a luminous stripe in the stone that resembles the thin vertical pupil of a cat's eye. These linear features may be needles of another mineral, such as rutile in chrysoberyl, or the tubes/voids sometimes found in aquamarine and tourmaline. The sharpness of the cat's-eye depends upon the density of the needles, their fineness, the quality of their orientation with the symmetry of the crystal, and the roundness of the cabochon.

Stars in stones are produced when multiple orientations of linear features scatter light in planes perpendicular to the lines. When light hits these inclusions, it creates two or more bands of reflected light or 'eyes'. When the stones are cut en cabochon perpendicular to the C-axis, these bright bands intersect at the apex of the cabochon dome and form stars. The effect is also known as asterism. Stones from the hexagonal crystal system exhibiting a six-rayed (rarely a 12-rayed) star include ruby, sapphire, beryl, and quartz. Garnets from the cubic crystal system and can sometimes show a four-rayed star.

Dispersion is the separation of white light into its specific colors. In 1666, Newton used a prism to

separate or disperse the white light from the sun into the component colors of the spectrum. These colors are red, orange, yellow, blue, green, indigo, and violet. Faceted gemstones act as complicated prisms that disperse white light into colors. Because different colors sparkle out of different facets, the result is called ‘fire’.

Color due to **interference** mechanisms is produced when a light wave splits upon entering a transparent medium, the various color wavelengths suffer differing retardation, and thus some are out of phase when they try to recombine outside of the medium. Interference often occurs when light rays are split at interfaces. Part of the light is reflected back at the interface, and part of the light is refracted downward. Because the speed of light is less in matter than in a vacuum, the refracted light is retarded. The various colors are dispersed by the medium and so each color follows a different path and is retarded to a different degree. Upon reaching another interface, some of the refracted light is reflected back and eventually exits the medium and tries to recombine with the original reflected part. Constructive interference causes color to be amplified. In this case, light waves traveling the longer path are retarded by an integral number of wavelengths and so they exit in phase, or in step, with the original reflected part. As a result, they reinforce each other and intensify the color. Destructive interference causes colors to be destroyed. Here, light waves on the long path travel so many integral wavelengths and a fraction more. Some are exactly out of phase with the original reflected light and, consequently, cancel each other. Low interference orders (reflected from the top and first, second, etc. interfaces) exhibit brilliant hues while high orders at deeper interfaces (fifth, sixth, etc.) show pale colors.

The play of color in labradorite, oil slicks on water, tight stacks of glass or cellophane, thin cracks in minerals, etc. are all examples of interference-produced colors. This is also known as iridescence and can be seen in fire-agate, the wings of some butterflies and the feathers of some birds.

Diffraction is a special case of interference caused by perfectly aligned layers of identically sized spheres of hydrous silica. Diffraction occurs when light waves bend as they pass the edge of an object. Light waves fan out (disperse) and bend through narrow openings between spheres, and they overlap and try to coalesce when there is more than one opening between spheres giving rise to interference.

The origin of the marvelous “play of color” in opal remained a mystery until 1965, when the scanning electron microscope revealed its cause. Two Australian gemologists, Darragh and Sanders, published “The microstructure of precious opal” (*Mineralogical Record* 1971 vol 2 #6 pp 261-268). Their article explained how patterns of spheres of silica interspersed with water, caused color in opal. The color depends upon the diameter of the spheres of silica, the uniformity of the spheres and their alignment, and the angle of incident light. This combination of diffraction and interference causes the varying intensity of color in opals.

This effect also shows how precious opal differs from ‘potch’. The perfect layers of identical spheres act like crystal lattice layers in normal interference, but different orientations give rise to differences in spacings yielding different colors. Scattered light from spheres of irregular size, shape, and/or alignment causes the milkiness or opalescence seen in potch.

Colors found in gems and minerals can be caused by many mechanisms, and most (fourteen out of fifteen) of these involve electrons. Many of the important causes of color involve absorption of some energies of light. Some of the mechanisms that cause the most spectacular colors are the result of geometrical physical phenomena, others are due to electronic and quantum physical phenomena. The origin of color in many gems and minerals is still not completely understood. Current research continues to unravel the causes behind the colors we observe daily in our world.

Further reading:

Nassau, K, "The origins of color in minerals", American Mineralogist, Volume 63, pages 219-229, 1978.

html: http://www.minsocam.org/msa/collectors_corner/arc/color.htm

pdf: http://www.minsocam.org/ammin/AM63/AM63_219.pdf

Book review of Theories, technologies, instrumentalities of color, B. Saunders and J. van Brakel, eds. Color Research and Application 28 (2003) 231-232.



Facet Designer's Workshop

Advanced Skill Designs



By *Ernie Hawes*

Most of the designs that we publish in our newsletter are easy enough for most faceters to be able to cut without much difficulty. But if that's all we ever published, we'd be leaving out some really beautiful designs. So, once in awhile, I feel it is appropriate to include designs that call for advanced skills. Such is the case in this issue.

Dylan Houtman, our president, is a highly skilled faceter who designs most of the patterns that he cuts. And often, Dylan's designs are both unusual, and require a fair amount of skill in order to cut them. The two designs selected for this issue definitely fit in the advanced to expert skill level. This is not to suggest that the average cutter shouldn't try cutting them. After all, to achieve a high level of skill, one

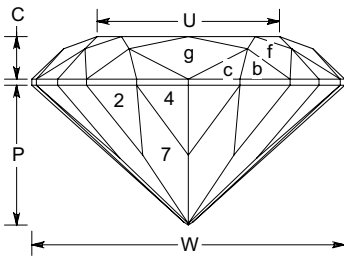
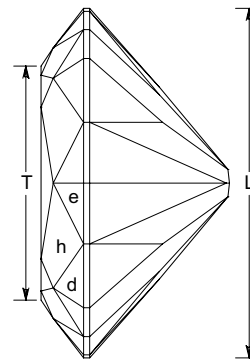
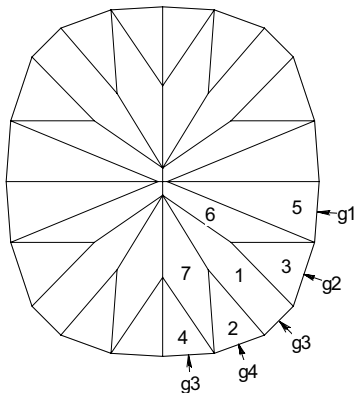
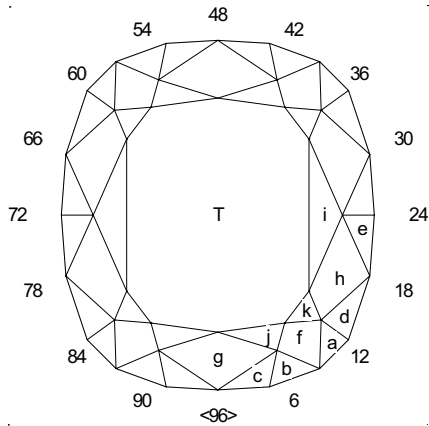
has to attempt tasks a bit beyond one's current skill level.

Faceters with average skills will find the first design demanding, but not overly difficult. It has a preform and detailed cutting instructions. The only real challenge is to practice easing in to meets on facets that are given in hundredths of a degree.

Dylan frequently designs for a specific piece of rough, and consequently gives the design a name based on that. Such is the case here, where he has named this design ***Cushion for Color Change Garnet***. Of course, you don't have to cut the design in color change garnet, a rare and difficult material to acquire. Other materials in a range of refractive indices would be appropriate. Other garnets, corundum and spinel are among the stones that should cut an attractive stone in this design.

Dylan's second design is more challenging. There is no preform, although the first two steps will give a good start on achieving the shape of the design. You will quickly realize when you get to step three that this is not a meetpoint pattern, and you will have to use your judgment in getting everything to come out correctly. However, once you have the pavilion done, the crown will be much easier to cut.

If you've been reading this column for some time, you will recognize the second design as a variation on an earlier design by Dylan. His Montringle pattern and another variation have appeared in earlier newsletters. ***Cut Corner Montringle II*** is part of a continuing series of designs. If you haven't seen the earlier designs and commentary, you may wonder about the pavilion angles. They're not what you'd expect in a design intended for corundum or other medium to high refractive index materials. All I can say is, they work. Try them. I think you'll be surprised. Dylan has cut the design in a number of different materials, and all have shown plenty of brightness and scintillation.



Cushion Cut for Color Change Garnet

By Dylan Houtman

Angles for R.I. = 1.800

69 + 20 girdles = 89 facets

2-fold, mirror-image symmetry

96 index

L/W = 1.114 T/W = 0.747 U/W = 0.582

P/W = 0.449 C/W = 0.138

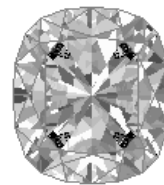
Vol./W³ = 0.261

Brightness: COS = 75.0 % ISO = 89.8 %

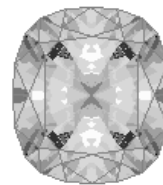
PREFORM

pf1	45.00°	12-36-60-84	Create temporary centerpoint
pf2	45.34°	05-43-53-91	Cut pf2-pf5 to same centerpoint as pf1
pf3	46.05°	01-47-49-95	
pf4	47.71°	19-29-67-77	
pf5	49.12°	23-25-71-73	
g1	90.00°	23-25-71-73	Set width
g2	90.00°	19-29-67-77	Cut level with g1
g3	90.00°	12-36-60-84	Cut level with g2
g4	90.00°	05-43-53-91	Cut level with g3
g5	90.00°	01-47-49-95	Cut level with g4

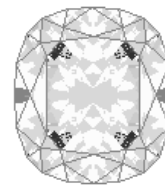
If there is insufficient room to join g5 facets together, complete the join and recut other girdle facets level with each other.



Random



COS



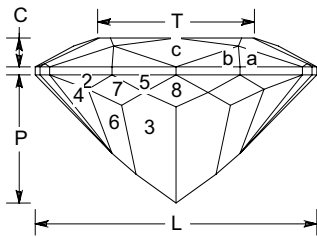
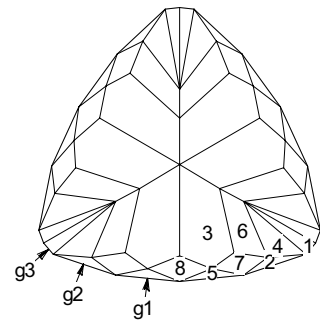
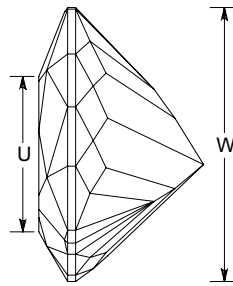
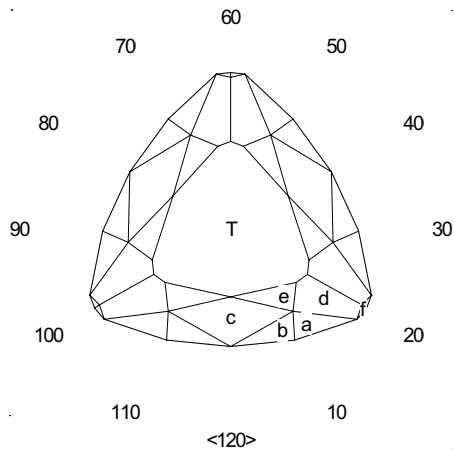
ISO

PAVILION

1	39.00°	12-36-60-84	Cut to girdle line
2	40.86°	05-43-53-91	Cut to girdle line
3	42.00°	19-29-67-77	Cut to girdle line
4	42.00°	01-47-49-95	Cut to girdle line
5	42.00°	23-25-71-73	Cut to girdle line
6	41.00°	21-27-69-75	Meet 3 & 5 at girdle
7	40.12°	03-45-51-93	Meet 2 & 4 at girdle

CROWN

a	42.00°	12-36-60-84	Set girdle thickness
b	43.15°	05-43-53-91	Cut to level girdle
c	39.91°	01-47-49-95	Cut to level girdle
d	42.62°	19-29-67-77	Cut to level girdle
e	42.88°	23-25-71-73	Cut to level girdle
f	37.00°	09-39-57-87	Meet a & b at girdle
g	37.00°	96-48	Meet c facets at girdle
h	37.00°	21-27-69-75	Meet d & e at girdle
i	22.00°	24-72	Meet at e, h
j	28.00°	02-46-50-94	Meet at b,c,f & g
k	26.09°	14-34-62-82	Meet at a,d,f & h
T	00.00°	Table	



Cut Corner Montringle II

By Dylan Houtman

Angles for R.I. = 1.760

79 + 18 girdles = 97 facets

3-fold, mirror-image symmetry

120 index

$L/W = 1.028$ $T/W = 0.576$ $U/W = 0.568$

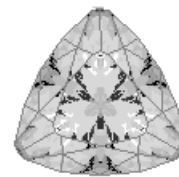
$P/W = 0.470$ $C/W = 0.108$

$Vol./W^3 = 0.194$

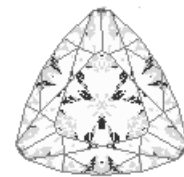
Average Brightness: COS = 77.6 % ISO = 88.7 %



Random



COS



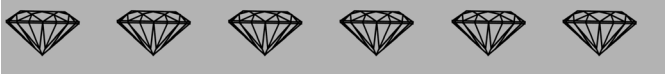
ISO

PAVILION

1	44.02°	016-024-056-064-096-104
2	60.86°	006-034-046-074-086-114
3	46.36°	002-038-042-078-082-118
4	46.36°	009-031-049-071-089-111
5	60.86°	002-038-042-078-082-118
6	46.36°	006-034-046-074-086-114
7	53.26°	004-036-044-076-084-116
8	53.26°	120-040-080
g1	90.00°	002-038-042-078-082-118
g2	90.00°	006-034-046-074-086-114
g3	90.00°	016-024-056-064-096-104

CROWN

a	36.97°	006-034-046-074-086-114
b	36.30°	002-038-042-078-082-118
c	30.73°	120-040-080
d	23.88°	013-027-053-067-093-107
e	17.70°	004-036-044-076-084-116
f	30.73°	016-024-056-064-096-104
T	00.00°	Table



Obituary for Herbert A. Traulsen

Herbert A. Traulsen died April 9, 2006 in the peaceful tranquility of his home, surrounded by his loving wife Maria and their two dogs. He was a long time resident of Albuquerque and had been an active member of the New Mexico Faceters Guild and the Albuquerque Gem and Mineral Club.

Herb Traulsen was born April 8, 1928 in Salina, Kansas. Herb joined the USAF after high school and became a master navigator, who located bomb sites with his camera during nighttime USAF photo reconnaissance missions in B-57 Twin 6's. Herb earned many degrees while in the USAF, including a BS in Business from Kansas State University and an MS in Business from Washington University in St. Louis. Herb also completed all course requirements at the USAF national headquarters that related to USAF law and contracts. Herb was a recognized specialist in fraud, government contracts, and logistics for the USAF and was often sent on special assignments to represent the USAF. Herb held a private pilot's license. He traveled extensively in the USAF and visited all continents except Antarctica. Herb served in the Korean Campaign, and he retired from the USAF in 1978 as a Lt. Colonel.

Herb also served in the Civil Air Patrol as a Chief Reservist Rap Officer, where he assisted in the training of cadets. Herb married Maria in 1973 in Kansas. The couple moved from Wichita, Kansas to Albuquerque, New Mexico in 1983.

Herb was an accomplished gourmet cook, and he often entertained groups of folks, whether at his backyard cookouts or at the formal dining room table, with his delicious food preparations. Herb was a gracious host and one of the nicest and most friendly people you could meet. He was a true gentleman. We will miss him.



In the News

More Plentiful Australian Chrysoprase

Source: Colored Stone May/June 2006

A syndicate of Australian and international businessmen recently purchased the mineral rights to the Candala chrysoprase mine in Marlborough, Queensland, Australia. The mine is considered to contain the world's finest quality chrysoprase. Chrysoprase is a translucent green form of chalcedony, a nickel-doped quartz, usually found with copper deposits. The Candala mine covers about one half of the Marlborough chrysoprase deposit. The other half is operated by a Chinese company that sells nearly exclusively to clients in Asia. The Candala mine has been dormant for about twenty years. The mine's previous owners unearthed substantial chrysoprase boulders that they dumped in one area, and it is estimated that about 40 to 45 tons of chrysoprase remain on the surface ready to be transported to market. Test drilling last December revealed that an estimated 500 tons of chrysoprase may well exist beneath the surface. Bulk sampling of the chrysoprase deposit have begun this spring, while simultaneously processing the material that already has been mined.

Sri Lanka's New Aquamarine Deposit

Source: Gems & Gemology Spring 2006

A new discovery of gem quality aquamarine was found in mid 2005 at the Akkerella estate, owned by Kahawatta Plantations Ltd, about 25 km southeast of Ratnapura, Sri Lanka. The aquamarine was unearthed during the mining of a quartz vein searching for industrialized silica, and the discovery led to a sudden gem rush with subsequent clashes between police and gem miners. The aquamarine crystals occur in sizes to 10+ cm long, and the color varies from a pale blue to a saturated dark blue that resembles Santa Maria aquamarine from Minas Gerias, Brazil. The Sri Lankan aquamarine crystals are embedded in quartz with mica and black

tourmaline, and they exhibit little to no greenish overtones. Dudley Blauwet had faceted and displayed some of these finished aquamarines at the 2006 Tucson Show.

Pyrope-Spessartine Garnet from Tanzania

Source: Gems & Gemology Spring 2006

A new find of garnets from Tanzania, greatly resembling the garnets from the Lindi Province near the Mowemkula River in the Namtamba village area of southeastern Madagascar, are being marketed as Imperial garnets from Tanzania. Found in late 2005, the gems exhibit pink to pinkish-orange to brownish-pink tones and have been determined to be a pyrope-spessartine garnet quite similar to the ones from Madagascar. The deposits share very similar geologic conditions that may be due to their close proximity, before the Madagascar plate separated from Tanzania.

Microscopic examination revealed the presence of iridescent needles, subhedral transparent birefringent crystals, and dust-like particles. Steve Ulatowski displayed some of these gems at the 2006 Tucson Show.

New Spinel from Tanzania

Source: Gems & Gemology Spring 2006

A new deposit of spinel has been found in the Mahenge area near the villages of Kibangili and Ipanko, Tanzania. Found last year, the spinels range in color from blue to violet and violetish-purple to purple. The spinels are recovered as water-worn pebbles from alluvial deposits. Advanced Quality A.C.C. Ltd. displayed some of these gems at the 2006 Tucson Show.

Just Where Exactly is Andesine From?

Source: Colored Stone July/August 2005 and updated May/June 2006

Andesine is a plagioclase feldspar much like sunstone and labradorite. Andesine contains 50 to 70% albite and 30 to 50% anorthite. Like sunstone, andesine exhibits deeply saturated orange-red to red, sometimes green, hues. Faceted examples of fine

quality andesine were displayed at the 2006 Tucson Show. However, andesine is reputed to occur both in the Congo and in China, and representatives from both the Congo and China market the gem as theirs. The confusion lies in the actual source for the gem, which remains shrouded in mystery.

Two Noteworthy Diamonds Found in Arkansas

Source: JCK June 2006

Two noteworthy diamonds were recently discovered at the Crater of Diamonds State Park in Murfreesboro, Arkansas, the only diamond mine in the world available for public exploration. The first was a flawless 4.21-carat canary yellow diamond, named the Okie-Dokie Diamond. The second was a 2.12-carat light yellow diamond. The largest diamond found at the park to date was a white 16.37-carat diamond named the Amarillo Starlight.

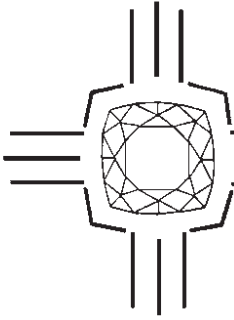
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