Swiss Branch:

GGTL - GemTechLab Laboratory
4bis route des Jeunes
CH – 1227 Les Acacias, Genève
SUISSE – SWITZERLAND

GGTL Laboratories Newsletter N°7
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Liechtenstein Branch:

GGTL - GEMLAB Laboratory
Gnetsch, 42
LI – 9496 Balzers
LIECHTENSTEIN

- ***The Cullinan Diamond Reports – The first real fingerprint diamond reports now offered by GGTL Liechtenstein.***

Our GGTL Laboratories Liechtenstein laboratory has developed a service for special diamonds – colorless as well as fancy colored – that represents the first actual diamond fingerprint report in the market. It ensures that a diamond analyzed will be identifiable at any time, even if it would have been recut (within a reasonable percentage of weight loss) in order to hide its reported size and weight. This new report has been brought into life in a partnership with Mr. Mark Cullinan, and in honor to the Cullinan family and the most spectacular historical diamonds it has been named the “**Cullinan Diamond Report**”.



A Very Special Report – A True Fingerprint Report

As the name “**Cullinan**” is associated with some of the world’s most spectacular diamonds - such as the famous Cullinan diamonds found in the English Crown Jewels - the Cullinan Report is a very special document:

The **GGTL Cullinan Diamond Report** is the ultimate analysis document in diamond testing. It represents a **true fingerprint report of a diamond**, hence a document that completely characterizes a diamond, way beyond a regular diamond report.

Extensive analytical data is kept at the laboratory for every diamond with a Cullinan report. Thanks to this amount of data a diamond with a GGTL Cullinan report can be identified by the GGTL Liechtenstein laboratory at any time, even if it has been recut (with reasonable weight loss).

The Details and Inside of a Cullinan Report

For every diamond that with a Cullinan report, advanced spectral data and imaging data is kept in the database of the laboratory that guarantees that the diamond can be identified at any time when tested at the laboratory, even after re-cutting (with reasonable weight loss).

This very special report is the only way a diamond can be identified at any time, no matter if the outline of the diamond has been modified. The advantage of this compared to all other methods used to tag diamonds, is that the Cullinan Report uses the only analysis procedure that guarantees, that after for example a theft of an important diamond, during which the diamond is recut in order to hide the origin of the stone, the stone will still be unambiguously identifiable at GGTL Laboratories Liechtenstein.

While all currently proposed methods rely on factors such as weight, cut and dimensions, or the presence of some tagging substance, the method applied by GGTL Laboratories maps a stone's defects via various imaging and spectroscopy methods, properties that cannot be modified without treating a diamond.



A Cullinan Report is only issued for high quality diamonds with specific properties, such as high color and clarity or rarity. They are available for both colorless as well as colored diamonds in two different editions – The Cullinan Report and – The Short Cullinan Report.

The Cullinan Report is both a diamond grading report with authenticity and color origin and a fingerprint report enabling identification of a diamond at any time.

The Short Cullinan Report is only a fingerprint report that includes authenticity and color origin, hence is not a grading document.

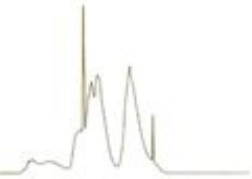
A **full Cullinan Report** contains the following:

- Grading characteristics (color, clarity incl. plot, cut etc.).
- Identification.
- Color origin.
- Type, with nitrogen/hydrogen/boron content (if determinable).
- IR spectrum.
- Photo of the stone.
- LW and SWUV fluorescence.
- Photo of characteristic DFI fluorescence or cathodoluminescence of stone.
- Advanced Sarine light performance analysis for stones up to 6 cts in the following shapes: round brilliant, princess, cushion, radiant, Asscher.
- Girdle inscription: report number, Cullinan report.

Sample Cullinan Diamond Report for a Colorless Diamond

First page

GGTL Laboratories Liechtenstein



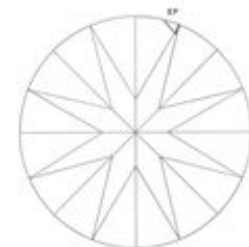
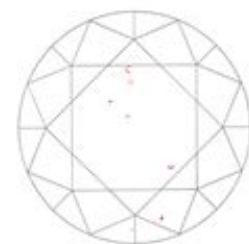
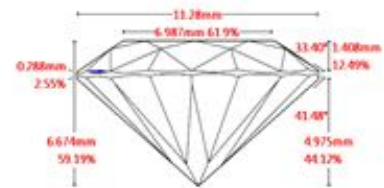
CULLINAN DIAMOND REPORT

No. 19-D-XXXX, page 1 of 2

Weight	5.04 ₂ carat.
Origine and type	Natural diamond, type IaA.
Color grade	E
Color origin	Natural.
Clarity	VS ₁
Shape and cut	Round brilliant.
Measurements	∅ ≈ 11.19 – 11.35 [11.28] / 6.67 mm.
Cut performance	Premium*. *Powered by Sarina, details on page 2
Cut grade	Very good.
Proportions	
Table	61.9 ‰
Total height	59.2 ‰
Crown °	33.4 °
Pavillion	44.1 ‰
Girdle	Thin to slightly thick, faceted.
Culet	None.
Finish	
Polish	Very good.
Symmetry	Very good.
Fluorescence	
LWUV	Faint blue.
SWUV	Faint yellow.
Girdle inscription	GGTL 19-D-XXXX Cullinan Report
Comments	This diamond has been tested by a large range of analytical techniques in order to obtain an important amount of characteristic data, of which only a fraction is shown in this report. The extensive data acquired for this diamond permits the identification of the stone at any time - even if recut (with reasonable weight loss) - hence represents an actual fingerprint of the diamond. All data is stored at the GGTL Liechtenstein laboratory and can be consulted by the lab at any time to verify a diamond with a Cullinan Report. The data shown in this report alone is not sufficient for verification.



Not to scale

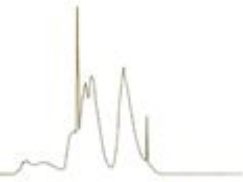


Sample Cullinan Diamond Report for a Colorless Diamond

Second page

GGTL Laboratories

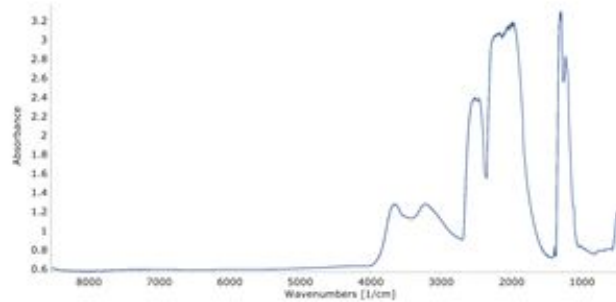
Liechtenstein



CULLINAN COLORED REPORT

No. 19-D-XXXX, page 2 of 2

Infrared spectrum

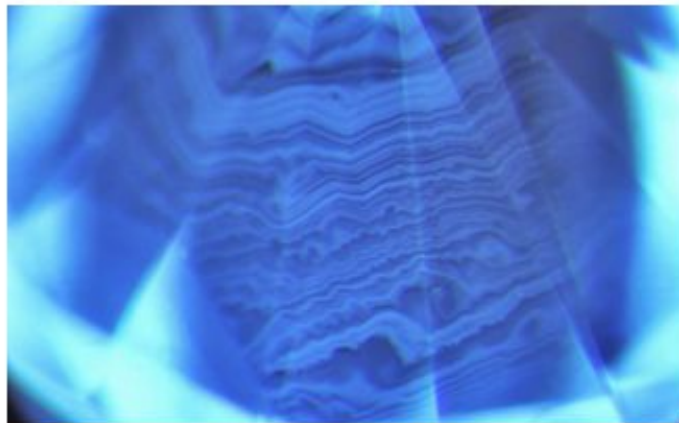


Nitrogen content, ppm A center ≈ 230 ppm; B center ≈ 20 ppm; C center undetectable (FTIR).
 Hydrogen content Undetectable (FTIR)
 Boron content, ppm Undetectable (FTIR)

Details of cut performance

Brilliance	High	Fire	High
Sparkle	High	Symmetry	High

DFI fluorescence image



This gemmological expertise has been carried out with all due care and can be repeated at any time within the framework of an identical analysis methodology. The validity of this document is subject to the conditions overleaf.

Balzers, May 27, 2019.



Dr. Thomas HAINSCHWANG, D.U.G.

Gianna PAMIES, G.G.

The Short Cullinan Report – The Ideal Document to Accompany a Diamond with Existing Grading Report

While the full Cullinan Reports include clarity, color and cut grading of the diamond, we also offer a version that does not include these characteristics, to avoid the risk of contradicting the grades of the existing report of another laboratory. The Short Cullinan Report is thus a pure fingerprint report - obviously including authenticity and color origin – only.

Even though not included in the report, we do keep all these grading characteristics in the laboratory database. The work performed for the Short Cullinan Diamond Report is identical to the work performed for a full Cullinan Report, and an equal amount of data is being kept at the laboratory.

A **Short Cullinan Reports** contains the following:

- Identification.
- Color origin.
- General basic color description.
- Type, with nitrogen/hydrogen/boron content (if determinable).
- IR spectrum.
- Photo of the stone.
- LW and SWUV fluorescence.
- Photo of characteristic DFI fluorescence or cathodoluminescence of stone.
- Girdle inscription: report number, Cullinan report.

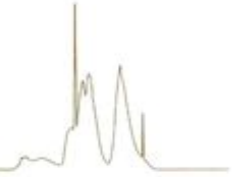


Just like a full Cullinan Report, the Short Cullinan Report is a document that guarantees that a diamond can be identified at any time when tested at the GGTL Liechtenstein laboratory, even after re-cutting (with reasonable weight loss).

Sample Short Cullinan Diamond Report for a Fancy Color Diamond

First page

GGTL Laboratories *Liechtenstein*



SHORT CULLINAN COLORED DIAMOND REPORT

No. 19-D-XXXX, page 1 of 2

Weight	1.55, carat.
Origin and type	Natural diamond, type IIb.
General color	Blue.
Color origin	Natural.

Shape and cut Pear brilliant.
 Measurements $\approx 9.54 \times 6.56 \times 4.02$ mm.

Fluorescence

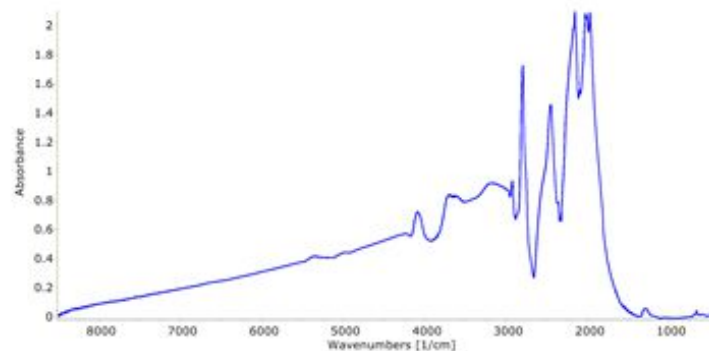
LWUV None.
 SWUV Faint green.

Girdle inscription GGTL 19-D-XXXX Cullinan Report



Not to scale

Infrared spectrum

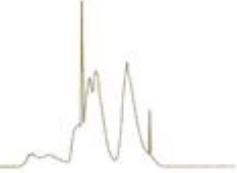


Nitrogen content, ppm Undetectable (FTIR)
 Hydrogen content Undetectable (FTIR)
 Boron content, ppm ≈ 3.5 pp

Sample Short Cullinan Diamond Report for a Fancy Color Diamond

Second page

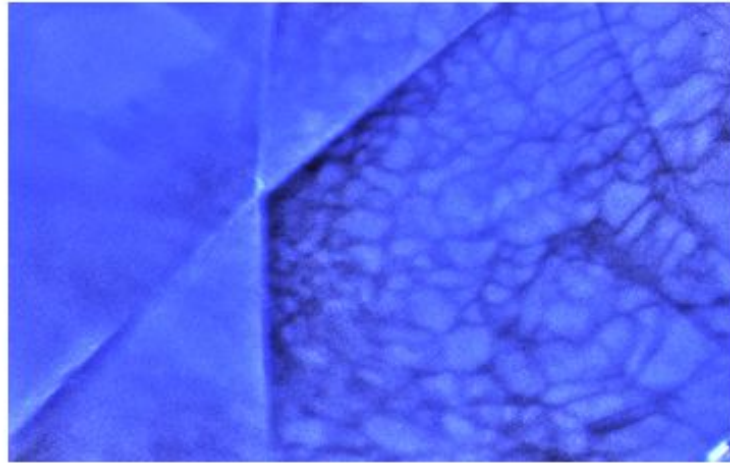
GGTL Laboratories Liechtenstein



SHORT CULLINAN COLORED DIAMOND REPORT

No. 19-D-XXXX, page 2 of 2

DFI fluorescence image



Comments

The diamond fingerprinted by this report is the diamond described in the report #XXXXXX of XXX Lab, dated XX/XX/XXXX. The Short Cullinan Colored Diamond Report is not a grading report, but only an authenticity and color origin report.

This diamond has been tested by a large range of analytical techniques in order to obtain an important amount of characteristic data, of which only a fraction is shown in this report. The extensive data acquired for this diamond permits the identification of the stone at any time - even if recut (with reasonable weight loss) - hence represents an actual fingerprint of the diamond. All data is stored at the GGTL Liechtenstein laboratory and can be consulted by the lab at any time to verify a diamond with a Cullinan Report. The data shown in this report alone is not sufficient for verification.

This gemmological expertise has been carried out with all due care and can be repeated at any time within the framework of an identical analysis methodology. The validity of this document is subject to the conditions overleaf.

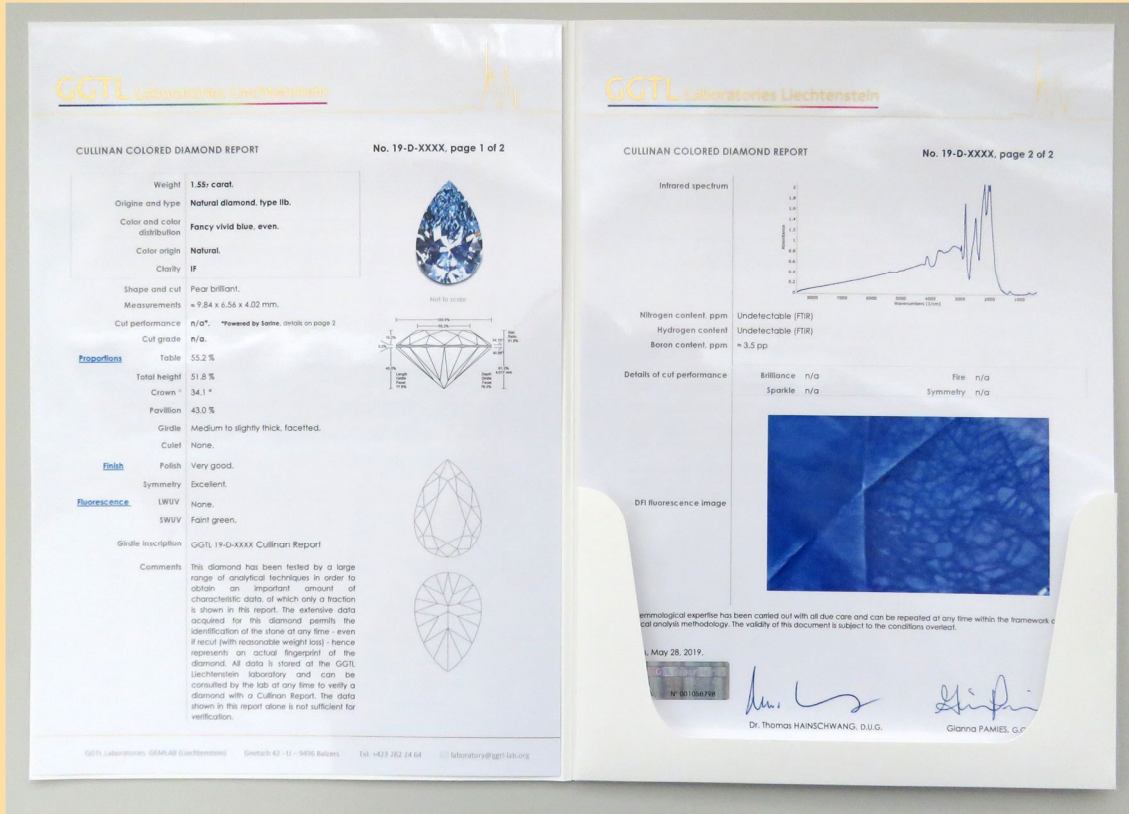
Balzers, May 27, 2019.



Dr. Thomas HAINSCHWANG, D.U.G.

Gianna PAMIES, G.G.

The Cullinan Report is laminated and furnished with a range of security features that make it virtually impossible to successfully forge such a document. It is presented in a two-page folder in A4 format, which is kept in a transparent plastic pouch ready with perforations to be kept in a ring binder.



Why a Cullinan Report?

If you own a very special diamond and need more than just a diamond report, then the Cullinan Report is what you need. It is the one document that will provide added value by giving total confidence that no matter what, your diamond will be recognizable and identifiable as the stone described in the report.

To give an example, this can be of great importance in case of theft, insurance fraud, etc., where a simple diamond report might not be sufficient to identify a diamond with certainty. Very commonly diamonds are recut in order to hide their identity; if such a stone is suspected to be a diamond for which a Cullinan Report was issued, then it can be identified at any time using the extensive data stored at our GGTL Liechtenstein laboratory.



Diamonds for Cullinan Reports can be submitted to both laboratories, but preferably directly to the GGTL Liechtenstein Lab. If submitted to the GGTL Switzerland Laboratory, the transports to the Liechtenstein Laboratory and back will be organized at the cost of the client.

For any queries please contact GGTL Liechtenstein's Dr Thomas Hainschwang at thomas.hainschwang@ggtl-lab.org or give us a call at +423 262 24 64.

About GGTL Laboratories Liechtenstein

GGTL Laboratories Liechtenstein has been formerly known as Gemlab (Liechtenstein), and was founded in 1996 by Dr Thomas Hainschwang. In 2011 the two laboratories Gemlab (Liechtenstein) and Gemtechlab (founded by Franck Notari in 1996, in Geneva, Switzerland) merged to form the group of laboratories known as GGTL Laboratories.

GGTL Laboratories Liechtenstein is a full-service gem testing laboratory with extensive expertise in diamond testing. The director Dr Thomas Hainschwang is specialized in fancy color diamond testing and has worked on this topic for the past 23 years; he holds a PhD in physics on type Ib diamonds from the University of Nantes, hence has spent 5 years of his life studying colored diamond containing single nitrogen. On top of this he has been continuously working on the controversial subject of origin of color of irradiation related colored diamonds such as green, greenish blue and green emitter diamonds. Besides the expertise for the testing of single stones, GGTL Liechtenstein is one of the very few laboratories which offers authenticity and color origin testing for parcels of melee sized fancy color diamonds of all colors. This very vast experience combined with a superbly equipped laboratory drove us to create the Cullinan Report, the first true fingerprint report in the market.