

The Making of an International Color Standard by GRS: "Pigeon's Blood" And "Royal Blue"

Definitions, Retrospective and Future

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DEFINITIONS

While the pigeon's blood color description was used in the past in the literature for rubies, GRS first made a master set for rubies that defined what pigeon's blood is in comparison to the intensity of red, namely vivid red was chosen as the color for pigeon's blood rubies. Vivid red is No. 4 in a scale of 5:

Pinkish-red (1), red (2), intense red (3), vivid red (4) and deep red (5), as published on our website since 2001.

GRS' Definition of Pigeon's Blood

Pigeon's blood color is a vivid red color (high intensity and low tone, e.g. no brown and orange overtones) of a certain group of natural rubies. Rubies exhibit medium to strong fluorescence if exposed to UV (365nm) light ([Report samples](#)).

Chemically the following compositions are found in GRS-type "pigeon's blood" rubies:

- High chromium (Cr) of approx. 0.3 to 0.5 wt-% (or higher) none, very low to medium iron (Fe), while the ratio of Cr/Fe is greater than 1 (individual face-up color and fluorescence corrections are also applied).

- Color is graded in day light using master sets as "vivid red" and the color descriptive term GRS-type "pigeon's blood" is added.

- The pigeon's blood color grade at GRS is applied independently of the origin and the rubies can either be heat-treated or unheated.

The pigeon's blood label is NOT granted for:

- beryllium-treated
- lead-glass-treated (Hybrid rubies)
- surface diffusion treated and
- synthetic rubies as well as stones with residues from heating e.g. H(b), H(c), H(d).

Traditionally, the gemstone market was dominated by pigeon's blood rubies from Burma, where of 95% are from the origin of Mong Hsu (dominantly heat-treated) until recently, approx. 5% from Mogok and 1% from Namya,

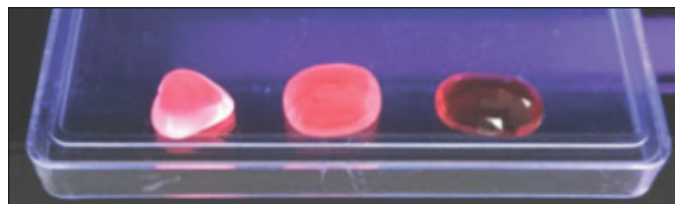


Fig. 1 (from left to right): Burmese "Pigeon's Blood" ruby (very strong fluorescence), Mozambican ruby type I, "Pigeon's Blood" (strong fluorescence), Mozambican ruby type II, (weak fluorescence)

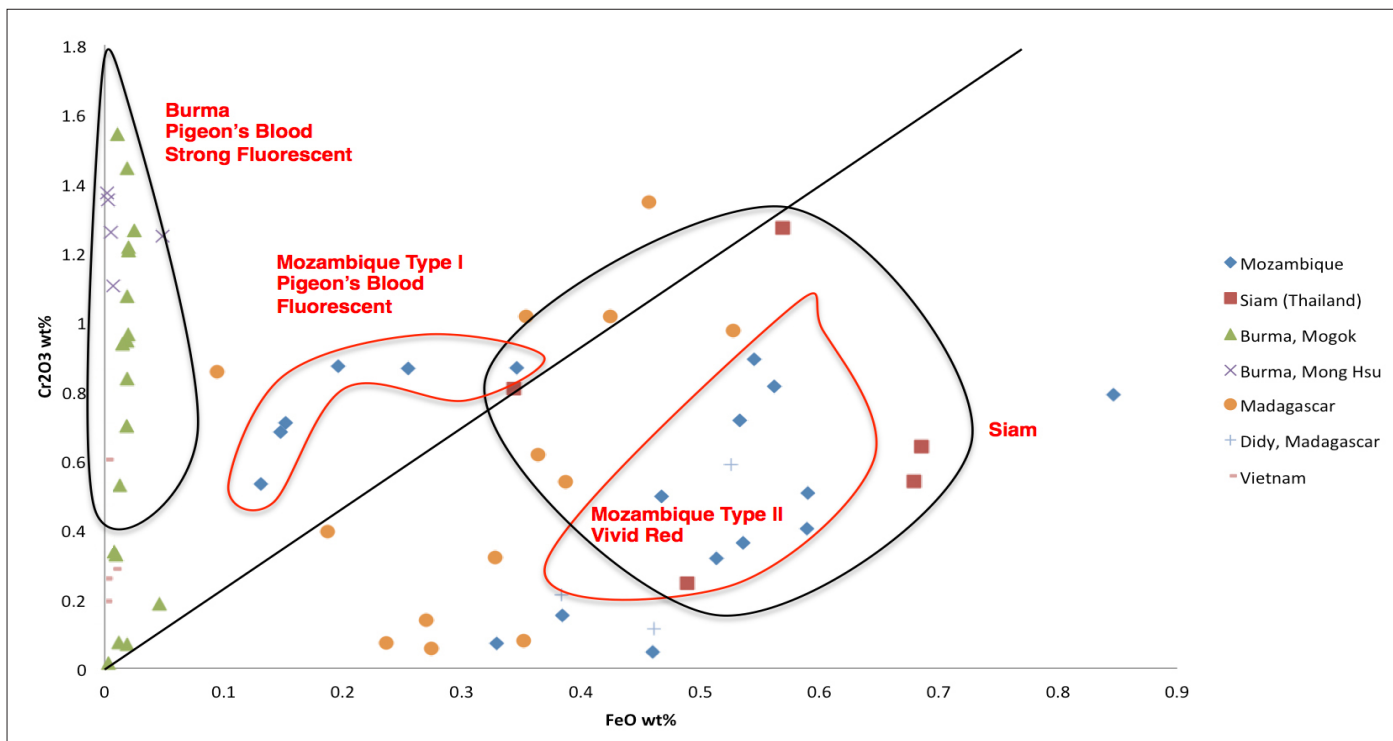
mixed heat-treated and unheated. Unheated Mong Hsu rubies are gemologically very distinctive to separate from Mogok and only a small portion of unheated rubies from Mong Hsu are of pigeon's blood color due to blue color zones producing purple secondary colors.

In recent years, pigeon's blood colors have been found from the origins of Vietnam, Tajikistan, Afghanistan and Madagascar and very recently from Mozambique. Roughly 20% of the high value vivid red colors from Mozambique (internal statistic based on stones tested at GRS laboratories) are granted the GRS-type "pigeon's blood" color (stated on the front page of the gemstone report). Although the fluorescence of Mozambique rubies may be slightly weaker than those of Burmese origin, medium to strong fluorescence can be observed with some stones when exposed to UV-light (365nm).

Some vivid red pigeon's blood colors from Mozambique and Burma cannot be distinguished if graded in daylight. Although most of the Mozambique rubies are heated, a relevant portion of rubies from this origin are unheated and of excellent clarity. In the last 2 years, these rubies have taken the place of rubies from Mogok in the international market, particularly in large sizes between 5 to over 10 carats. The beauty of large sized Mozambique rubies is unparalleled if both color and clarity are taken into consideration.

GRS laboratories possess currently 2 types of master sets with pinkish-red, red, intense red, vivid red and deep red stones. One composed of Burmese rubies and a second set with Mozambican rubies.

All GRS locations have one set each ([Switzerland](#), [Hong Kong](#), [Bangkok](#) and [Sri Lanka](#)).



HISTORY: GRS INTRODUCES THE "PIGEON'S BLOOD" LABEL TO THE WORLD OF GEMSTONE REPORTS IN 1996

The concept of pigeon's blood for rubies, cornflower blue and royal blue for sapphires has been published by GRS in 1996. The pigeonblood.com name domain is property of GRS since 2001. The color grades have been intensively used in GRS reports and have moved away from romanticizing literature to become a world standard, now used by almost all of our competitors in the laboratory industry.

IS THE TERM PIGEON'S BLOOD USED BY OTHER LABS?

The term has been used by many other labs, often cited today also in auction catalogues as:

May also be called "pigeon's blood" in the trade Or poetically referred as "pigeon's blood" in the trade.

While this wording appears on the main page of the competitors reports, it is often replaced in the short notes of the auction catalogues simply as "pigeon's blood" color given by other labs or the color grade is given straight forward in the appendix of other gemstone reports (without any waiver). Therefore, in practice our color grading has been widely confirmed internationally and used by

other laboratories, although unfortunately used without citation of GRS and sometimes even claiming the introduction of the terms to the market.

COLOR GRADE DECOUPLING FROM ORIGIN - A FAIR CONCEPT

Color grades are assigned independently of the stones origin. Origin is a subjective opinion and the results may vary between laboratories. In contrast to origin, the designated color grades can easily be judged by the end consumer (much easier than the origin opinion). Therefore, it is beneficial for end consumer to decouple color grades from origins. If 2 parameters (origin determination and color grading) get linked, this may lead to more difficulties for the end consumer to evaluate the product (most of the time he cannot judge origin due to lack of highly-sophisticated instruments and reference materials). During the last 2 years, the trade accepted the "pigeon's blood" color grade for other origins than Burma, for example Mozambique. In the opinion of GRS Laboratories it is considered a fair situation. The end consumer can easily compare Burmese and Mozambican rubies with pigeon's blood color grade and can make up his own mind about the accuracy by comparing and agreeing or disagreeing. *(The vast majority of Burmese rubies with pigeon's blood colors are assigned to heated stones from Mong Hsu (close to the Thai border), a mining area that is 250 km away from the classic mining area of Mogok).*

AVAILABILITY OF PIGEON'S BLOOD RUBIES IN THE MARKET AND FUTURE PERSPECTIVES

The peak Burmese ruby production was between 2002 and 2008, and has now been replaced by Mozambique as the world's leading ruby producer ([Lit. Daily News Basel-world 2015](#)). The pigeon's blood label creates an excellent successor for Mozambican rubies of same quality. It is already very well recognized in the international market and continued production can be expected with increasing popularity and recognition.

We herewith inform the trade that our color grading concepts are in the best interest of the end consumer and the whole gemstone industry. We will do our utmost in research to provide the best possible product and keep you posted on important developments, as they become known to us. Please enjoy our historical retrospective of developing the color standards now accepted all-over the world.

Yours Sincerely,



Dr. A. Peretti
Director GRS Laboratories

Literature:

[First publication of pigeon's blood, cornflower blue and royal blue color concept in 1996.](#)

RUBIES AND SAPPHIRES CERTIFIED BY GRS AND THEIR APPEARANCE AT INTERNATIONAL AUCTIONS – A DECADE OF RECOGNITION OF THE GRS-TYPE "PIGEON'S BLOOD" AND "ROYAL BLUE" COLOR CONCEPT.

INTRODUCTION

Although the terms "Pigeon's Blood" and "Royal Blue" have historical roots in the literature describing rubies and sapphires, it has also been used for over a decade by GRS laboratories to systematically describe the color of the finest rubies and sapphires in the world. The following chapter is a short review of the literature in which our laboratory reports have been published using these color terms. Our research included mostly auction catalogues. As these objects are auctioned and the result is publically known. This information can be used to establish value of rubies and sapphires as the auction results are published online or can be found in the GRS library. For full references of over 1,000 citations go to our [GRS website](#). A selection of published reports, particularly the reports that were published in auction catalogues with our "pigeon's blood" and "royal blue" color grading are included in this article (Tab. 02, 03, 04, 05).

FIRST GRS REPORTS REFERENCED IN AUCTION CATALOGUES

The first two ever published reports of GRS appeared in a catalogue by Christie's in London for its June auction in 1996 used for a sapphire and diamond ring (lot 208, Peretti Gemlab AP-9602007, the previous name of GRS) and for a ruby by Christie's in London in 1997 (lot 91, GRL9704027, GRL was later renamed GRS). At that time, we used our color terminology for selected gems only. The first high-value unheated Burmese ruby of 22.54 ct size was hammered at Sotheby's in Geneva, Switzerland in May 2000 (Lot 459) for 1,600,000 CHF without premium (equivalent to 900,000 USD at that time) with a GRS-report (report from 1997, GRL9711067) and was also accompanied with a second report from another laboratory. The first ever published report in a Hong Kong auction appeared in a catalogue from Christie's in May 2000 (Lot 1620) with a GRS-report (GRS2000-01277) for an "Antique Style Ruby and Diamond Butterfly Clip Brooch". The first ruby surpassing the 3 million dollar mark was sold with a GRS report (joined with other laboratory reports) at Sotheby's in Geneva Switzerland (November 2000) for an unheated Burmese Ruby (lot 480, Superb Ruby and Diamond Ring, 32.67ct).

GRS TYPE "PIGEON'S BLOOD"

The first GRS certified pigeon's blood ruby in the million-dollar category was auctioned by Sotheby's in May 2002 (lot 240, 8.01 ct ruby, GRS report no. 2002-03295). The auction house published our findings as follows:

The ruby is of Burmese origin, no indication of thermal enhancement and that the colour is vivid red (GRS type "pigeon's blood"), with the additional rarity comment: "Very rare combination of size, colour variety, fine brilliancy and absence of heat enhancement".

The oldest GRS-type "pigeon's blood" report published by an auction house appeared in the Sotheby's auction in Hong Kong (May 2002), where an important pair of Burmese ruby pendant earrings was sold (GRS report no. 2001-11585 was from November 2001). The trend of promoting branded jewelry along with GRS reports was world-wide observed such as in auctions by Bonham's, Christie's and Sotheby's and continues to this day spanning over a period of more than a decade (see tab. 01, 02, 03, 04, 05). GRS-certified rubies with the pigeon's blood color description mounted in important necklaces did more often appear in the last years in highly valued necklaces at Christie's between 2007-2012 in Hong Kong (every year between 2007 to 2012, See Tab. 02, 03) and in Hong Kong by Sotheby's (in 2004, 2008 and 2010, See Tab. 02, 03) but also magnificent rings with GRS certified pigeon's blood rubies were published in auction catalogues, such as the "Ruby an Diamond Ring by Wallace Chan" (Christie's, Hong Kong, May 2009, Lot 1724) (See also Tab. 01).

GRS-TYPE "PIGEON'S BLOOD" RUBY - A NEW WORLD BRAND INITIATED BY GRS

The continuous appearance of pigeon's blood rubies in the auction catalogues over a period of 10 years has shown that the public has appreciated this descriptive term for the most valuable rubies in the world. It has been introduced by GRS in 2001, and only since about 2006 we spotted a report using the term "pigeon's blood" by another recognized laboratory (Christie's, Hong Kong, November 2006, Lot 2918) and one of the latest international recognized laboratory that adapted our concept was noticed in 2012 (Christie's Hong Kong, May 2012, Lot 3801). It was however, more frequently used by almost every international recognized laboratories in the last year. It must therefore be assumed, that our terminology has gained worldwide acceptance and appreciation by the end-consumer and has become a world-standard.

Recently, emerging new mines have also produced pigeon's blood colored rubies ([A Review of Beauty and Rare](#)

ity of Mozambique Ruby). These magnificent unheated pigeon's blood rubies have already captured the attention of the market and the public will definitively open a new chapter in the history for the most beautiful rubies of the world. They will appear in **internationally recognized auction houses** with the finest that they have to offer.

GRS AND THE BRANDS

The first GRS certified rubies set in jewellery by Tiffany and Bulgari appeared at a Sotheby's auction in Switzerland in 1998. The first GRS certified ruby jewellery by Cartier appeared at an auction in 1999 and the list of brands expanded with time (see Tab. 01). It includes Asprey, Bulgari, Cartier, Chaumet, Currens, Etcetera, Fred Leighton, Fulvio Scavia, Harry Winston, Manuel Bouvier, Mouawad, Marina B., Nardi, Van Cleef & Arpels and Wallace Chan (in alphabetical order, not complete).

GRS REPORTS FOR HEATED RUBIES CITED IN AUCTION CATALOGUES AND THE INVENTION OF THE H(A) AND H(B) CONCEPT

While most of the published GRS reports were for unheated rubies and sapphires, a limited number of spinels, peridots, alexandrites, garnets and tourmaline, only a small number of reports for heated stones were published in the auction catalogues. They were published in catalogues for auctions in Hong Kong and Melbourne by Sotheby's and Christie's (See Tab. 02). The residue grading of GRS was used in the catalogues to describe these rubies with our code abbreviation's H(a) and H(b) in Hong Kong and New York (e.g. Sotheby's December 2004, lot 230 and 232, Ruby and Diamond Pendant necklace). The auction catalogue mentioned that the rubies were accompanied by GRS report no. 2004-070559 stating that our report says "the ruby is of Burmese origin; enhanced by heat, minor residues present". A pair of ruby and diamond ear clips was auctioned in Hong Kong with GRS2003-02484 report (Lot 619) stating the finding of our report. The description that is printed on the reverse side of our reports was cited "Enhanced by heat, residues insignificant (indication of very small residues within fissures only)". This time the full wording was used and not our abbreviation. Heated rubies never gained much attention by the auction houses between 1996 and 2012.

GRS-TYPE "ROYAL BLUE"

Sotheby's in St. Moritz published the first GRS Report using the color description "royal blue" in February 1998 (GRL9712003). It was a Sri Lankan sapphire ring from Van

Cleef & Arpels. GRS was cited describing the stone as "intense royal blue". The oldest GRS report with GRS-type "Royal Blue" mentioned in an auction catalogue was found in an auction at Christie's in New York (October 2000, Lot 622, A sapphire and diamond ring, GRS-2000-04168).

The first GRS-certified royal blue sapphire of magnificent quality that fetched a multimillion-dollar auction result was sold in Geneva, Switzerland (Sotheby's November 2001, Lot 406). It was an "Exquisite Sapphire and Diamond Ring" sapphire weight, 58.97 ct. The catalogue states the findings of the GRS report No. GRS2001-04395 as "The sapphire is of "Burmese origin", no indication of thermal enhancement and the special comment: "Extremely rare combination of color variety ("royal blue"), excellent clarity and brilliancy, and absence of heat treatment. The achieved record price must have definitely put the "Royal Blue" label to the attention of the buyers and brands for future important sapphires. Burmese origins are mostly promoted by the auction houses but not exclusively. GRS reports for Sri Lanka, Madagascar, both heated and unheated have been published as well. A selection of sapphires that were labeled as GRS-type "royal blue" is shown in the table 04 and 05. These new sapphire origins are today almost the only source of the world's most important sapphires. They will make their way to the international auctions as soon as the public understands these facts. These sapphires can also achieve the best "royal blue" color and will dominate the future market place after the Burmese source continuously proves to be exhausted and it has to be seen in the next year after Burma has opened its doors to investors whether the mines can be brought back to production after a long interruption period (see [Jewellery News Asia article - GRS Expedition to the Mogok Ruby, Sapphire and Spinel mines](#)).

History of GRS Reports published in the literature: GRS-type “Pigeon’s Blood”

Tab.01: Branded jewellery and GRS reports at auctions (literature research of auction catalogues)

House	Month	Year	Location	Lot #	Item	Report Number	Color
Sotheby's	May	1998	Geneva	413	An Important Ruby and Diamond Ring, by Tiffany & Co.	GRL9803066	
Sotheby's	Jun	1998	London	337	Fine Ruby and Diamond Crossover Ring, by Bulgari	GRL9804026	
Sotheby's	May	1999	Geneva	327	Ruby and Diamond Ring, by Bulgari	GRL9804026	
Sotheby's	Nov	1999	Geneva	191	Sapphire and Diamond Ring, by Cartier	GRS9810017	
Sotheby's	Oct	2001	New York	59	Ruby and Diamond Ring, Cartier. Circa 1935.	GRS2001-05110	
Sotheby's	Jun	2004	London	270	Ruby and Diamond Ring, Asprey	GRS2004-030345	
Sotheby's	May	2005	Hong Kong	1046	Spectacular Ruby and Diamond Bib Necklace and Pair of Matching Pendent Earrings, Fulvio Scavia	35 GRS Reports	
Christie's	Nov	2005	Geneva	168	A Sapphire and Diamond Ring, By Carvin French	GRS2003-060460	
Christie's	Nov	2005	Hong Kong	2036	A Diamond and Ruby Eternity Band, By Mouawad	GRS2005-080753	
Christie's	May	2006	Geneva	161	A Ruby and Diamond 'Trombino' Ring, by Bulgari	GRS2003-101172	
Christie's	Jun	2006	Hong Kong	2576	An Impressive Ruby and Diamond Ring, By Chaumet	GRS2004-020417	
Christie's	Apr	2007	New York	106	A Ruby and Diamond Ring, by Nardi	GRS2005-050977	
Sotheby's	May	2007	Geneva	84	Ruby and Diamond Ring, Bulgari	GRS2003-101172	
Christie's	Nov	2007	Geneva	92	A Charming Ruby Ring, By De Grisogono	GRS2007-050101T	
Sotheby's	Oct	2008	Hong Kong	1744	Sapphire and Diamond Ring, Van Cleef & Arpels	GRS2000-08245	
Christie's	May	2009	Hong Kong	1724	A Superb Ruby and Diamond Ring, by Wallace Chan		
Sotheby's	Apr	2010	Hong Kong	1400	Sapphire and Diamond Ring, Cartier	GRS2009-072454	
Christie's	Apr	2010	New York	163	A Sapphire and Diamond Ring, By Fred Leighton	GRS2001-07187	
Christie's	Apr	2010	UAE	79	An Unusual Sapphire, Diamond and Emerald Ring, By Manuel Bouvier	GRS2008-091669	
Sotheby's	Oct	2010	Hong Kong	1738	Ruby and Diamond Bracelet, Cartier	GRS2010-081257	
Christie's	Nov	2010	Hong Kong	2036	A Stunning Pair of Ruby and Diamond Ear Pendants, By Etcetera	"GRS2005-091122 GRS2006-111356"	vivid red (GRS type "pigeon's blood")
Sotheby's	Apr	2011	Hong Kong	1671	Important Ruby and Diamond Ring, Bulgari	GRS2010-092136	vivid red (GRS type "pigeon's blood")
Sotheby's	Apr	2011	Hong Kong	1669	Red Spinel, Pink Sapphire, Amethyst and Diamond Ring, Wallace Chan	GRS2010-051637	
Christie's	May	2011	Hong Kong	3070	A Sapphire and Diamond Ring, By Van Cleef & Arpels	GRS2010-121784	vivid blue (GRS type "royal blue")
Christie's	May	2011	Hong Kong	3021	A Set of Ruby and Diamond Jewellery, By Harry Winston	GRS2005-010946	vivid red (GRS type "pigeon's blood")

History of GRS Reports published in the literature: GRS-type "Pigeon's Blood" and "Royal Blue"

Tab.02: GRS Reports published in auction catalogues of unheated "Pigeon's Blood" rubies from Burma (Myanmar)

House	Month	Year	Location	Lot #	Item	Report Number	Weight
Sotheby's	May	2002	Geneva	240	Very Fine Ruby and Diamond Ring	GRS2002-03295	8.013
Sotheby's	May	2002	Hong Kong	1856	Important Pair of Burmese Ruby Pendant Earrings	GRS2001-11585	3.069
Sotheby's	Apr	2004	Hong Kong	867	Ruby And Diamond Ring	GRS2004-010717	6.656
Sotheby's	Apr	2004	Hong Kong	1001	Ruby and Diamond Ring	GRS2003-070494	3.018
Sotheby's	May	2004	Geneva	82	Fine Ruby and Diamond Ring	GRS2003-100574	3.023
Sotheby's	May	2004	Geneva	285	Important Pair of Ruby and Diamond Earclips	GRS2004-010463	7.103
Sotheby's	May	2004	Geneva	304	Attractive Pair of Ruby and Diamond Pendant Earrings	GRS2004-010712	3.043
						GRS2004-010713	3.129
Christie's	Nov	2004	Hong Kong	2132	Ruby and Diamond Ring	GRS2004-070195T	7.726
Christie's	Nov	2004	Hong Kong	2192	Rare Ruby and Diamond Ring	GRS2004-070205T	5.956
Sotheby's	Nov	2004	Hong Kong	1039	Ruby and Diamond Necklace and Pair of Matching Pendent Earrings	GRS2004-040551	22.57
Sotheby's	May	2005	Hong Kong	984	Ruby and Diamond Ring	GRS2004-070668	4.032
Sotheby's	May	2005	Hong Kong	1035	Fine Ruby and Diamond Ring	GRS2005-010952	6.06
Sotheby's	Oct	2005	Hong Kong	1442	Pair Ruby, Pink Diamond and Diamond Pendant Earrings	GRS2004-050693	2.58
						GRS2004-050694	3.35
Sotheby's	Oct	2005	Hong Kong	1244	Ruby and Diamond Ring	GRS2005-060003T	5.10
Sotheby's	Oct	2005	Hong Kong	1435	Ruby and Diamond Ring	GRS2005-080663	7.02
Sotheby's	Oct	2005	Hong Kong	1449	Ruby and Diamond Ring	GRS2005-080637	8.03
Christie's	Nov	2005	Hong Kong	2072	A Pair of Ruby and Diamond Ear Pendants	GRS2005-080748	2.082
						GRS2005-080747	
Christie's	May	2006	Geneva	31	A Ruby and Diamond Ring	GRS2006-011077	3.296
Sotheby's	May	2006	Geneva	323	Ruby and Diamond Ring	GRS2005-091134	4.041
Christie's	Jun	2006	Hong Kong	2316	A Ruby and Diamond Ring	GRS2005-080392	2.461
Christie's	Jun	2006	Paris	269	A Ruby, Diamond and Gold Ring	GRS2005-011237	5.29
Sotheby's	Nov	2006	Geneva	440	Very Fine and Important Ruby and Diamond Ring	GRS2005-091135	9.247
Christie's	Nov	2006	Hong Kong	2734	A Ruby and Diamond Ring	GRS2004-060854	3.043
Christie's	Feb	2007	St. Moritz	212	A Pair of Ruby and Diamond Ear Clips	GRS2004-090727	3.227
						GRS2004-090728	
Sotheby's	Apr	2007	Hong Kong	1819	Important and Rare Pair of Ruby and Diamond Pendent Earrings	GRS2006-021099	4.09
Christie's	May	2007	Hong Kong	2097	A Ruby and Diamond Ring	GRS2005-060554	4.102
Sotheby's	Oct	2007	Hong Kong	972	Pair of Ruby and Diamond Ear Clips	GRS2006-082049	3.067
						GRS2004-050417	
Christie's	Nov	2007	Hong Kong	2221	A Set of Ruby and Diamond Jewellery	GRS2007-090961	5.895
						GRS2007-090962	
						GRS2007-090963	
Christie's	Nov	2007	Hong Kong	2197	A Ruby and Diamond Necklace	GRS2007-081988	56.21
Sotheby's	Oct	2008	Hong Kong	1742	Pair of Ruby and Diamond Earrings	GRS2006-020421	
						GRS2005-100983	2.032
Sotheby's	Oct	2008	Hong Kong	1743	Ruby and Diamond Ring	GRS2007-061948	4.15
Sotheby's	Apr	2008	Hong Kong	2196	Fine Ruby and Diamond Necklace and Pair of Matching Earrings	GRS2007-091841	77.855
						GRS2008-021717	
Christie's	May	2008	Hong Kong	2291	An important Ruby and Diamond Pendent Necklace	GRS2007-091842	72.54 total
Sotheby's	Apr	2009	Hong Kong	1306	Fine Ruby and Diamond Ring	GRS2007-010862	5.04
Christie's	May	2009	Hong Kong	1649	A Ruby and Diamond Necklace	GRS2008-071624	60.265
Christie's	May	2009	Hong Kong	1647	A Pair of Ruby and Diamond Ear Pendants	GRS2008-112393	11.15
Bonhams	May	2009	Hong Kong	1361	A Ruby and Diamond Ring	GRS2007-030767	8.679
Sotheby's	Oct	2009	Hong Kong	1496	Pair of Ruby and Diamond Ear Studs	GRS2008-021717	3.01
Sotheby's	Oct	2009	Hong Kong	1313	Ruby and Diamond Ring	GRS2006-100984	2.068
Christie's	Oct	2009	Hong Kong	2291	A Ruby and Diamond Ring	GRS2008-033098	4.04
Christie's	Oct	2009	Hong Kong	2419	A Ruby and Diamond Ring	GRS2009-031715	5.013
Bonhams	Nov	2009	Hong Kong	592	A Ruby and Diamond Ring	GRS2007-061948	4.154
Sotheby's	Oct	2009	Hong Kong	1486	Pair of Ruby and Diamond Pendent Earrings	GRS2008-040969	31.69
Sotheby's	Apr	2010	Hong Kong	1604	Ruby and Diamond Necklace	GRS2008-073916	53.277
Sotheby's	Oct	2010	Hong Kong	1979	Very Fine Pair of Jadeite, Ruby and Diamond Pendent Earrings	GRS2009-071380	1.045
						GRS2009-071381	
Christie's	Jun	2010	Hong Kong	2255	A Ruby and Diamond Ring	GRS2003-091208	2.01
Christie's	Jun	2010	Hong Kong	2335	A Ruby Necklace	GRS2009-0813229	47.06 total
Christie's	Nov	2010	Hong Kong	1842	A Ruby and Diamond Pendent Necklace	GRS2009-112094	2.04
Christie's	Nov	2010	Hong Kong	1845	A Suite of Ruby and Diamond Jewellery	GRS2002-01493	2.065
Christie's	Nov	2010	Hong Kong	1970	A PAIR OF STAR RUBY AND DIAMOND EAR PENDANTS	GRS2008-011457	6.03
						GRS2008-011458"	
Christie's	Nov	2010	Hong Kong	1972	A Star Ruby and Diamond Bracelet	GRS2010-083365	44.50 Total
Christie's	Nov	2010	Hong Kong	2036	A Stunning Pair of Ruby and Diamond Ear Pendants, By Etcetera	GRS2005-091122	5.024
						GRS2006-111356	
Sotheby's	Oct	2010	Hong Kong	1960	Ruby and Diamond Necklace and Pair of Matching Ear Clips	GRS2008-073917	94.281
						GRS2008-073918	
Christie's	Nov	2010	Hong Kong	2035	An Impressive Ruby and Diamond Necklace	GRS2010-052439	57.48
Sotheby's	Apr	2011	Hong Kong	1671	Important Ruby and Diamond Ring, Bulgari	GRS2010-092136	27.67
Sotheby's	Apr	2011	Hong Kong	1648	Ruby Bracelet	GRS2011-021783	26.91
Christie's	May	2011	Hong Kong	3207	A Ruby and Diamond Necklace	GRS2010-102529	56.716
Christie's	May	2011	Hong Kong	3279	A Stunning Ruby Necklace	GRS2010-082060	64.95
Christie's	Nov	2011	Hong Kong	2579	Ruby and Diamond Ring	GRS2007-082427	3.13
Christie's	Nov	2011	Hong Kong	2714	A Pair of Ruby and Diamond Ear Pendants		19.89
Christie's	Nov	2011	Hong Kong	2715	A Ruby Necklace	GRS2011-092899	
Christie's	Nov	2011	Hong Kong	2716	A Ruby Bangle	GRS2010-091257	
Christie's	May	2012	Hong Kong	3607	A Ruby and Diamond Bracelet	GRS-2011-096650	22.97 total

Tab.03: GRS Reports published in auction catalogues of heated "Pigeon's Blood" rubies from Burma (Myanmar)

House	Month	Year	Location	Lot #	Item	Report Number	Weight	Comment
Christie's	Jun	2006	Hong Kong	2349	A Ruby and Diamond Ring	GRS2005-100121T	7.679	H(b)
Sotheby's	Apr	2008	Hong Kong	2037	Pair of Ruby and Diamond Ear Clips	GRS2008-022586 GRS2008-022587	3.027	H(a)
Sotheby's	Oct	2009	Melbourne	52	A Burmese Ruby and Diamond Ring	GRS2007-011865	2.615	H(b)
Christie's	May	2011	Hong Kong	3021	A Set of Ruby and Diamond Jewellery, By Harry Winston	GRS2005-010946	12.588	H(a)

Tab04: GRS Reports published in auction catalogues of heated and unheated "Royal Blue" sapphires from Sri Lanka & Madagascar

House	Month	Year	Location	Lot #	Item	Report Number	Weight	Comment	Origin
Sotheby's	Feb	1998	St. Moritz	636	A fine Sapphire Ring Van Cleef and Arpels	GRL9712003	25.3	NH	Sri Lanka
Christie's	May	2007	Hong Kong	2102	A Pair of Sapphire and Diamond Ear Clips	GRS2006-112178	26.83	H	Sri Lanka
Christie's	May	2007	Hong Kong	2103	A Sapphire and Diamond Ring	GRS2005-101175	20.288	H	Madagascar
Sotheby's	Oct	2007	Hong Kong	839	Sapphire and Diamond Ring	GRS2005-100907	6.294	NH	Madagascar
Sotheby's	Apr	2008	Hong Kong	2089	Star Sapphire and Diamond Ring	GRS2008-091689	13.837	H	Sri Lanka
Bonhams	Nov	2009	Hong Kong	538	A Sapphire and Diamond Ring	GRS2008-050146T	29.334	H	Sri Lanka
Sotheby's	Oct	2010	Hong Kong	1872	Sapphire Ring	GRS2010-022413	18.483	NH	Sri Lanka
Sotheby's	Apr	2011	Hong Kong	1667	Very Fine Ruby and Diamond Necklace and Pair of Matching Pendent Earrings	GRS2011-012645	5.93	H	Sri Lanka
Christie's	May	2011	Hong Kong	3070	A Sapphire and Diamond Ring, By Van Cleef & Arpels	GRS2010-121784	3.382	H	Sri Lanka

Tab05: GRS Reports published in auction catalogues of unheated "Royal Blue" sapphires from Burma

House	Month	Year	Location	Lot #	Item	Report Number	Weight
Christie's	Oct	2000	New York	622	A Sapphire and Diamond Ring. Heart Shaped Diamond 11.02 cts.	GRS2000-04168	11.04
Sotheby's	Oct	2000	Hong Kong	1046	Exquisite Sapphire and Diamond Ring. Sugarloaf Cabochon 58.51 cts.	GRS2000-06325	58.51
Sotheby's	Nov	2002	Geneva	330	Fine Sapphire Ring	GRS2002-071046	23.458
Christie's	Nov	2004	Hong Kong	2191	Elegant Set of Sapphire Jewellery	GRS2004-070204T	6.407
Sotheby's	Jun	2005	New York	314	Platinum, Sapphire and Diamond Ring	GRS2004-050329T	6.05
Christie's	May	2006	Geneva	27	A Sapphire and Diamond Ring	GRS2004-080090T	3.799
Sotheby's	Oct	2006	Hong Kong	1445	Star Sapphire and Diamond Ring	GRS2006-020497	8.718
Christie's	Nov	2007	Hong Kong	2217	A Sapphire and Diamond Ring	GRS2006-091141	12.427
Sotheby's	Apr	2008	Hong Kong	247	Sapphire and Diamond Ring	GRS2006-070704	11.631
Sotheby's	Apr	2008	Hong Kong	1991	Sapphire and Diamond Ring	GRS2007-050717	5.677
Sotheby's	Apr	2008	Hong Kong	2035	Sapphire and Diamond Ring	GRS2007-081470	11.007
Sotheby's	May	2008	Hong Kong	2193	A Sapphire and Diamond Ring.	GRS2008-020400T	16.09
Sotheby's	Oct	2008	Hong Kong	1859	Fine Pair of Sapphire and Diamond Earrings	GRS9908082 GRS2006-112881	8.563
Sotheby's	Apr	2009	Hong Kong	1273	Pair of Sapphire, Tsavorite Garnet and Diamond ' Peacock' Earrings	GRS2005-060923 GRS2006-061481	8.428
Sotheby's	Oct	2009	Hong Kong	1505	Sapphire and Diamond Ring	GRS2008-071590	7.024
Sotheby's	Oct	2010	Hong Kong	1961	Sapphire and Diamond 'leaf' Brooch	GRS2006-110905	33.97
Christie's	Nov	2010	Hong Kong	1846	Three Strands of Sapphire Necklaces	"GRS2009-091452 GRS2009-0901453 GRS2009-0901145	40.1
Sotheby's	Nov	2010	Geneva	413	Sapphire and Diamond demi-parure	GRS2010-081996	34.98
Christie's	Nov	2010	Hong Kong	1966	A Sapphire, Chalcedony and Diamond Ring	GRS2010-021539	9.136
Sotheby's	Apr	2011	Hong Kong	1637	Fine Pair of Sapphire and Diamond Earrings	GRS2010-122198	8.56
Christie's	Nov	2011	Hong Kong	2721	A Sapphire and Diamond Ring	GRS2007-110365T	21.38
Christie's	Nov	2011	Hong Kong	2749	A Sapphire and Diamond Ring	GRS2004-030435T	14.16
Christie's	May	2012	Hong Kong	3701	A Pair of Sapphire and Diamond Ear Pendants	GRS2012-013839	11.66, 10.72
Christie's	May	2012	Hong Kong	3702	A Sapphire and Diamond Ring	GRS2011-101168	30.8