

## DUBAI ACCREDITATION DEPARTMENT

### REPORT ON PTP 194<sup>TH</sup> INTER-LABORATORY PROFICIENCY TESTING PROGRAM DETERMINATION OF GOLD IN GOLD JEWELLERY ALLOYS

Date: 15 August 2010

#### 1. INTRODUCTION

This document presents the results of the 194<sup>th</sup> inter-laboratory proficiency-testing program conducted during the month of July involving the determination of **gold in gold jewellery alloys** with six laboratories participating.

This program is part of the Inter-laboratory Comparison Programs organized by Dubai Accreditation Department (DAC) of Dubai Municipality (DM) for monitoring the validity of test results of laboratories operating in Dubai as a requirement of the Local Order 52/1990 and ISO/IEC 17011: 2004.

For this inter-laboratory comparison proficiency testing program DAC used strips of gold purchased from a gold factory accompanied with analysis certificate.

#### 2. EXPERIMENTAL DESIGN

##### 2.1 Participants:

A total of six laboratories participated in this program. One of them is governmental laboratory.

##### 2.2 Samples Tested:

The samples, consisted of gold strips of approximately 2 grams each, were distributed to all participating laboratories. The test samples were prepared from one gold strip divided into six samples, which were randomly assigned to the six participating laboratories with each participant being given one gold strip with a unique identification number provided during the time of collection.

#### 3. CONFIDENTIALITY

Each laboratory is given a code number to maintain confidentiality of results and to protect their identities. Only the concerned laboratory knows its code number. If you have doubt about your code number please don't hesitate to contact Dr. Yaser Saleh Rahag (Tel: 302 7074) to know your code number.

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### 4. TEST METHOD

Instructions were given to the participants to test the samples for determination of Gold in Gold Jewellery alloys-Cupellation Method (Fire Assay) as per BS EN ISO 11426:1999.

### 5. TEST RESULTS

The test results submitted by the participating laboratories are presented in Appendix A. In order to protect the identity of the participating laboratories, each one was assigned a code number. The numbers in the column headings, Lab #, of the tables represents the code numbers for the participating laboratories.

### 6. EVALUATION OF RESULTS

#### 6.1 Method of Analysis

The analysis of the participant's results is based on *ISO 13528:2005 (Statistical Methods for the Use in Proficiency Testing by Inter-laboratory Comparisons)*

#### 6.2 Calculations of Z- scores

Appendix B gives the details of the calculation of the laboratories results and their Z-Scores which are obtained from the raw data. Also Z- Score and participant's results are represented in a bar chart and X-Y scattered plots C. The Z-Score calculation is based on an international Standard (*ISO 13528:2005*).

#### 6.3 Outlier Results

After evaluating the Z-Score, the results from all participating laboratories are found within the Z-score limits of  $\pm 3$ , therefore, all the results are acceptable.

However, one participating laboratory has showed Z-score values higher than **two** which representing **not outlier** but a warning limit, this laboratory is advised to investigate the potential root cause of such results.

### 7. APPENDICES

#### 7.1 Appendix A: Raw Data

#### 7.2 Appendix B: Calculation of z-scores and other statistics

#### 7.3 Appendix C: Charts

#### 7.4 Appendix D: Factory Report

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## Gold in Gold Jewellery Alloys

### Appendix A: Raw Data

#### The Average Gold Content (%)

Lab #	Results
Lab G03	917.103
Lab 10	917.370
Lab 5	917.000
Lab 53	916.700
Lab 109	917.240
Lab112	917.170

**Gold in Gold Jewellery Alloys**

**Appendix B: Calculation of z-scores and other statistics**

**The Average Gold Content (%)**

Iteration	0		1		2		3		4		5		6		Z Score
$\delta = 1.5 s^*$	---	xi-x*	0.27	(xi-x*) <sup>2</sup>	0.29	(xi-x*) <sup>2</sup>	0.29	(xi-x*) <sup>2</sup>	0.29	(xi-x*) <sup>2</sup>	0.29	(xi-x*) <sup>2</sup>	0.29	(xi-x*) <sup>2</sup>	
x* - $\delta$	---		916.87		916.84		916.84		916.84		916.84		916.84		
x* + $\delta$	---		917.40		917.41		917.41		917.41		917.41		917.41		
Lab 53	916.700	0.44	916.87	0.07	916.87	0.07	916.87	0.07	916.87	0.07	916.87	0.07	916.87	0.07	-2.20
Lab 5	917.000	0.14	917.00	0.02	917.00	0.02	917.00	0.02	917.00	0.02	917.00	0.02	917.00	0.02	-0.65
Lab G03	917.103	0.03	917.10	0.00	917.10	0.00	917.10	0.00	917.10	0.00	917.10	0.00	917.10	0.00	-0.12
Lab112	917.170	0.03	917.17	0.00	917.17	0.00	917.17	0.00	917.17	0.00	917.17	0.00	917.17	0.00	0.23
Lab 109	917.240	0.10	917.24	0.01	917.24	0.01	917.24	0.01	917.24	0.01	917.24	0.01	917.24	0.01	0.59
Lab 10	917.370	0.23	917.37	0.06	917.37	0.06	917.37	0.06	917.37	0.06	917.37	0.06	917.37	0.06	1.27
Average	917.10		917.13	0.16	917.13	0.16	917.13	0.16	917.13	0.16	917.13	0.16	917.13	0.16	
SD	0.23		0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.03	
New x*	917.14	0.12	917.13	0.17	917.13	0.17	917.13	0.17	917.13	0.17	917.13	0.17	917.125	0.17	
New s*	0.18		0.19		0.19		0.19		0.19		0.19		0.193		

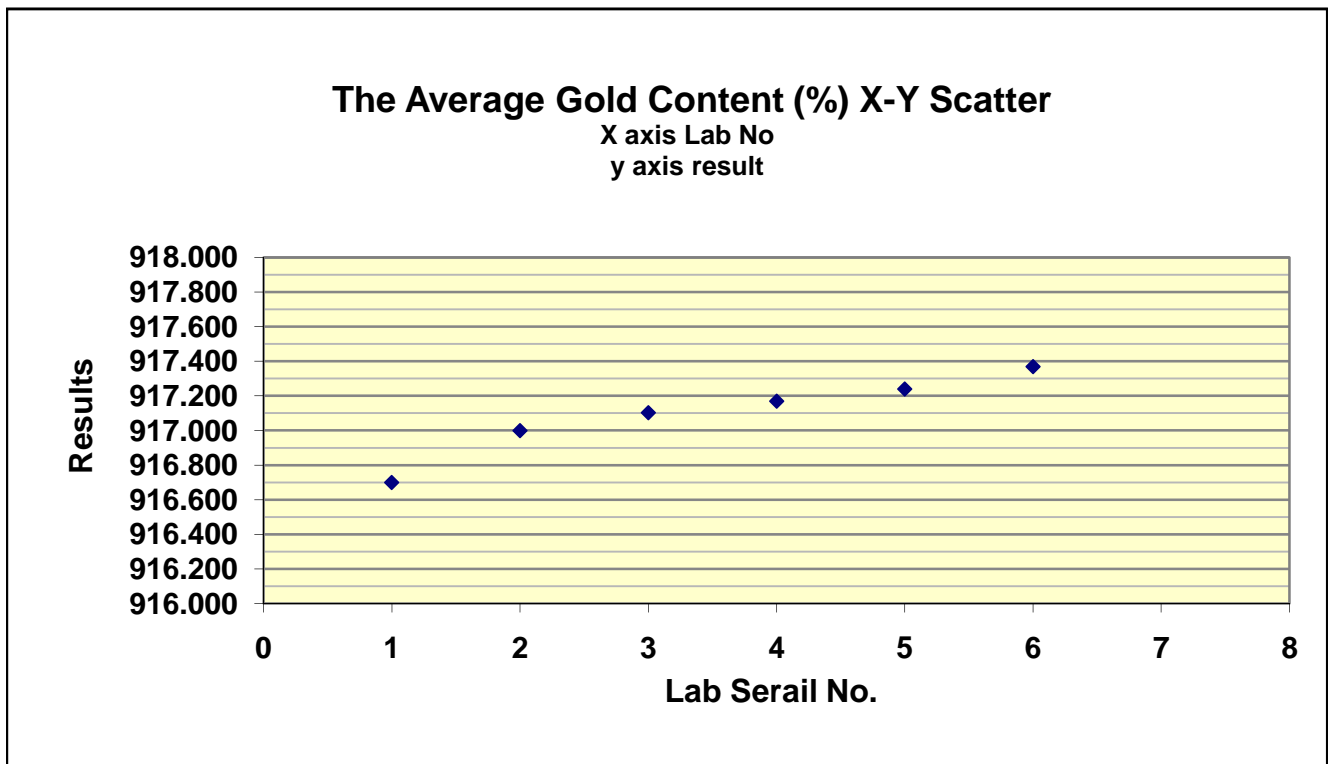
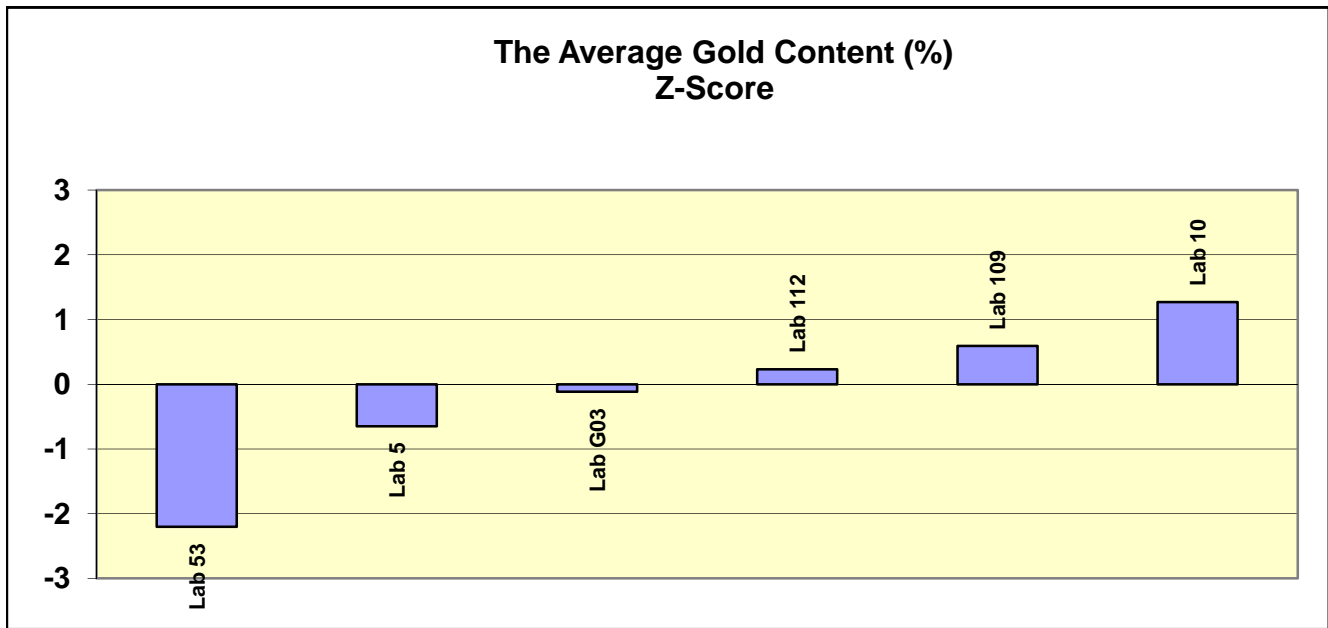
N 6

Target value	917.125
Low Acceptable	916.546
High Acceptable	917.705
Acceptable Range	916.546 - 917.705

# Gold in Gold Jewellery Alloys

## Appendix C:Charts

### The Average Gold Content (%)



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## الإمارات حياض و الفضة م.م.م.م.

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### تقرير فحص المعادن الثمينة ANALYSIS REPORT for precious metals

Test Method: BS EN 31426 : 1994

**/C No** A-01-200-315  
DUBAI CENTRAL LABORATORY DEPT.  
DUBAI,  
U.A.E.

**Date:** 06/06/2010  
**Ref:** EG/08/2010

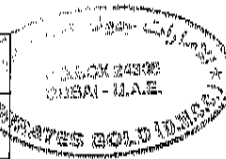
Code No.	Description	Weight (Grs) Before Melting	Weight (Grs) After Melting	Less Sample	Fineness (Per 1000)	Fine Weight (Grams)
51-001	GOLD SAMPLE 1	15.30	15.30	0.00	917.28	14.03
<b>RAND TOTAL</b>		<b>15.30</b>	<b>15.300</b>		<b>917.28</b>	<b>14.03</b>

**Remarks:** AS AGAINST OUR REF. MDN34347

**Fine Ounce:** 0.451

**Cost of Refining:**

العيار	٢٤	٢٢	٢١	٢٠	١٨	١٦	١٤	١٢
Karat	24	22	21	20	18	16	14	12
نسبة الذهب	999.9	916	875	833	750	666	583	500
Fineness (Per 1000)	999.9	916	875	833	750	666	583	500



#### NOTE:

The content of this report is only of the basis of items received by us for melting, assaying or refining and information furnished by the client. Emirates Gold D.M.C.C. and Emirates Gold L.L.C. is not responsible for client interpretation of neither the report nor any consequence(s) raised from the report.

#### ملاحظة :

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*This computer-generated Report bears no signature.*

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PRECIOUS METAL REFINERS - ASSAYERS - MANUFACTURERS OF JEWELLERY, GOLD AND SILVER BARS