

# NATIONAL RESOURCE AND RESERVES REPORTING COMMITTEE OF TURKEY (UMREK)

## PROCESS OF TURKEY (DATED JUNE 2018) AND WORKSHOPS NOTES

26-27  
January  
2017  
Workshop

Process  
of  
Turkey  
2018

25  
August  
2017  
Workshop



Prepared By  
Mining Engineer, MSc Halim DEMİRKAN



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**NATIONAL RESOURCE AND RESERVES  
REPORTING COMMITTEE OF TURKEY  
(UMREK)**

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**ANKARA  
June 2018**

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Mining Engineer, MSc  
Halim DEMİRKAN**

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## FOREWORD

**UMREK** works on the basis of Law No. 6745 prevailing to “Project Support for Investments and Amendment of Certain Laws and Decree-Laws”, effectuated upon publication in the Turkish Official Gazette No. 29824 of September 7, 2016 and Additional Article 14 of the Mining Law No. 3213.

The “**NATIONAL RESOURCE AND RESERVE REPORTING COMMITTEE OF TURKEY**”, shortly called **UMREK**, was founded to ensure that any exploration and operating activities performed in the mining areas are reported in accordance with the international standards must have materiality, competence and transparency.

The increased international commodity trade and the globalization have resulted in an increased number of mining investments, particularly the international investments. In this context, there is a need to adopt an **exploration/resource/reserve standardization** acceptable to all the stakeholders in regard to the worldwide mining investments. The standards that slightly differ from each other (JORC, PERC, NI43-101, etc.) have been accordingly formularized and accumulated under an organization called CRIRSCO. And **UMREK** aims at getting these standards adopted in Turkey.

**UMREK** will ensure that any data collected in the course of mine exploration, research and production as well as the samples analyzed and tested by the accredited laboratories according to the international standards are reported by the qualified staff (QP/CP). Competence, transparent and clear reports are expected to create a consensus among the engineers, planner, miners, investors and financing institutions under the free competitive market conditions.

**UMREK** system will ensure that:

- The data collected as a result of the mining exploration and production activities will be reliable to improve the mining industry;
- The investors will encounter less risks in the mining investments;
- The evaluation, management, exploration and operation of the natural resources will be planned in an appropriate manner,
- Any technical employees in the mining industry will be properly classified, educated, trained and qualified.

First UMREK Workshop organized on January 26 and 27, 2017 in participation of the national and foreign field experts and industrial representatives for the purpose of enlightenment of all the stakeholders and establish a system in compliance with the international standards.



Second workshop organized on 25th August 2017 in participation of the experts from South Africa, Mongolia, Kazakhstan, Brazil, Australia.

The workshop presentations have been compiled as to allow all the stakeholders exchanging their opinions with the industrial representatives. The website dedicated to UMREK publishes the texts of such presentations.

I have compiled my notes taken in the course of presentations and edited this publication based on the presentation texts upon approval of the speakers. And also, I added UMREK process of Turkey dated June 2018.

This compilation is presented as an attachment to the Turkey's first and only English publication on mining, **Mining Turkey Magazine** to enlighten the mining circles in regard to the UMREK activities that would break ground in evaluation of our national underground resources.

Also, I would like to give my very special thanks to **Mr. Mithat CANSIZ** (Chairman of UMREK) who shares his precious suggestions during the preparation of this book.

Sincerely,

Halim DEMİRKAN  
Mining Engineer, MSc





COMMITTEE FOR MINERAL RESERVES INTERNATIONAL REPORTING STANDARDS

17 May 2018

The National Resources and Reserves Reporting Committee of Turkey (UMREK)  
Mevlana Bulvarı, No: 76  
Yenimahalle  
Ankara  
Turkey

Mr. Mithat CANSIZ  
Chairman of UMREK

Dear Mr Cansiz

CRIRSCO (the Committee for Mineral Reserves International Reporting Standards) welcomes Turkey as its latest Member, and its first member in Eurasia.

In preparing for membership, Turkey established the National Resources and Reserves Reporting Committee of Turkey (UMREK) as its National Reporting Organisation (NRO).

UMREK developed the The National Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves Code of Turkey (The UMREK Code) in both Turkish and English. The UMREK Code is compliant with the CRIRSCO International Reporting Template and aligned with other established CRIRSCO member codes and standards.

Competent Persons preparing public reports on Exploration Results, Mineral Resources and Mineral Reserves will be members of a new professional body established in Turkey, the Association of Geosciences, Mining and Metallurgy Professionals (YERMAM). The role of the Competent Person demands a high degree of professionalism and significant expertise and experience in estimation and reporting of Mineral Resources and Mineral Reserves. YERMAM will maintain the professional standards of its members necessary to demonstrate competence.

CRIRSCO congratulates UMREK on the excellent team work in preparing for membership under your leadership, and CRIRSCO looks forward to the successful implementation of the UMREK Code in Turkey.

Yours sincerely

Neil WELLS  
CRIRSCO Chairperson, 2018

# **UMREK Process (Dated June 2018)**

## UMREK PROCESS (DATED JUNE 2018)

UMREK works on the basis of Law No. 6745 prevailing to “Project Support for Investments and Amendment of Certain Laws and Decree-Laws”, effectuated upon publication in the Turkish Official Gazette No. 29824 of September 7, 2016 and Additional Article 14 of the Mining Law No. 3213.

The Regulation of UMREK (National Mineral Reserve and Resource Reporting Commission) has been published in the Official Gazette dated 26.07.2017 and numbered 30135. The president and members of UMREK have been appointed on 03.10.2017. In addition, “Regulation on the Amendment of the Regulation on the National Mineral Resource and Reserve Reporting Commission” was published in the Official Gazette dated 29.12.2017, numbered 30285 and entered into force. According to the recent amendments to the Regulation, the total number of commission members has been increased from seven to nine and it will be ensured to employ experts who had the title of Competent Person (QP/CP) from national reporting institutions that were members of CRIRSCO (International Mineral Reserve Reporting Standards Committee) in working groups (such as Working Group of Preparation of Regulation and Reporting Standards or Working Group of Education and Certification). With that amendment, the appointment of new members was carried out in order to increase the number of board members from 7 to 9.

In the following table, president, vice president and members of National Mineral Reserve and Resource Reporting Commission have been shown.

NAME SURNAME	INSTITUTION	TITLE
Mithat CANSIZ	General Directorate of Mining Affairs (MIGEM)	General Director of MIGEM / Chairman of UMREK
Dr.Mesut SOYLU	Sector Representative	Geological Engineer / Vice Chairman of UMREK
Uğur YAYLAÖNÜ	Capital Markets Board (SPK)	Manager of Accounting Standards Department
Muhammet ERİŞEN	Banking Regulation and Supervision Agency (BDDK)	Manager of Department of Legal Affairs
Cahit DÖNMEZ	Mineral Research And Exploration Institute (MTA)	Manager of Department of Mineral Research and Exploration
Kadem EKŞİ	Sector Representative	Geophysics Engineer
Prof. Dr. Atiye TUĞRUL	Turkish Union of Chambers and Commodity Exchanges (TOBB)	Geological Engineer
Cem Sacit YÜCEER	Sector Representative	Geological Engineer
Dr. Barış Gazanfer YILDIRIM	Sector Representative	Geological and Mining Engineer

The Association of Earth Sciences, Mining and Metallurgy Professionals (YERMAM) has been established on 04.12.2017 with the aim of bringing together domestic and international professionals working in the field of earth sciences, mining and metallurgy, developing cooperation among its members and cooperating with the "National Mineral Reserve and Resource Reporting Commission (UMREK).

Dr. Harry PARKER, who was the former president and representative of CRIRSCO, has intensively worked for UMREK's CRIRSCO membership process. Likewise, Professor at the Colorado School of Mines. Dr. Kadri DAĞDELEN has been informed about the comparison of the English and Turkish versions of the UMREK Code. As a result of works done with Professor Dr. Kadri DAĞDELEN, the compatibility of the UMREK Code in English and Turkish has been ensured.

Works to ensure the CRIRSCO membership done by UMREK and ministry have been completed as of the end of January 2018, and Turkey has made membership application to CRIRSCO (International Mineral Reserve Reporting Standards Committee) on February 2018.

UMREK Code will help Turkish professionals to gain international recognition and UMREK will represent Turkey in CRIRSCO as 13th member. To be a member of CRIRSCO (International Mineral Reserve Reporting Standards Committee) means that Turkey can use UMREK Code with international recognition.

Market Reporting written according to UMREK Code aims to reduce risks for the related project or for the companies planning to provide finance from potential investors in related company. UMREK Code has 66 articles totally based on CRIRSCO Template, a scheme, two tables and four appendixes. UMREK Code has been approved by 24 representatives of 12 members of CRIRSCO on May 2018. In addition, in the meeting dated 21.09.2017, numbered 34/1151 held by Decision Making Body of Capital Markets Board (SPK), reports prepared by Competent Person designated by UMREK and recommended by YERMAM will be taken as basis in valuation services that will be given by capital market and valuation and reporting of Mineral Exploration, Mineral Resource and Reserves. In short, UMREK code has provided the extensive support of stock exchange, banks and mining sector.

**FOUNDING OF NATIONAL RESOURCE AND RESERVE REPORTING  
COMMITTEE OF TURKEY  
(UMREK)**

**LAW**

**Law Name:** Mining Law

**No:** 3213 Law

**Date:** 04/06/2016

**Ex Article 14:**

National Resources and Reserves Reporting Committee of Turkey, of which UMREK is the abbreviated title, has been established with the object of constituting explicit, credible and applicable mineral resource and reserve data pertaining to exploration, prospection and production of minerals which is performed by Competent Persons and/or authorized legal entities in accordance with international standards and scientific and technical guidelines, determining the reporting standards and criteria in respect thereof and publishing, setting up a system, implementing and development of the system, creating strategies and targets, determining the required qualifications sought for Competent Persons, providing training, certifying, enregistering and keeping records of Competent Persons, supervising, garnishing, suspending or invalidating the documents of the Competent Persons, being a member of the international related organizations or cooperating with these organizations, engaging in activity of publishing, researching and training about the area of responsibility and making regulations and publishment about these activities.

All kinds of secretarial services, including the financial affairs of UMREK (National Resources and Reserves Reporting Committee of Turkey) are carried out by General Directorate of Mining Affairs. UMREK shall obtain revenues from training activities, certification, annual fee, publications and other activities.

UMREK shall act independently and demand information, documents and opinions from public institutions and organizations, natural and legal entities while fulfilling its task.

Attendance fee which is given to the members of UMREK is determined by the Council of Ministers upon the proposal of the Ministry.

The principles and procedures concerning the organization, administration, working principles together with the required qualifications, tenures and termination of the memberships of the commission members of UMREK.

The procedures and principles concerning the organization, administration and operation of UMREK and the qualifications to be sought in the appointment of the members, tenures and termination of the memberships shall be regulated by the Ministry.

## **REGULATION**

The Regulation of UMREK (National Mineral Reserve and Resource Reporting Commission) has been published in the Official Gazette dated 26.07.2017 and numbered 30135. In addition, "Regulation on the Amendment of the Regulation on the National Mineral Resource and Reserve Reporting Commission" was published in the Official Gazette dated 29.12.2017, numbered 30285 and entered into force. With that amendment, the appointment of new members was carried out in order to increase the number of board members from 7 to 9.

Some important articles of regulation are given below.

### **Objective and scope**

#### **ARTICLE 1 –**

(1) The objective of this Regulation is to embody the principles and procedures concerning the organization, administration, tasks, working principles together with the required qualifications, tenures and termination of the memberships of the committee members of UMREK that is established with the object of constituting explicit, credible and applicable mineral resource and reserve data pertaining to exploration, prospection and production of minerals which is executed by Competent Persons in accordance with international standards and scientific and technical guidelines, determining the reporting standards and criteria in respect thereof and publishing, setting up a system, implementing and development of the system, creating strategies and targets, determining the required qualifications required to identify for Competent Persons, providing training, certifying, enregistering and keeping records of Competent Persons, supervising, garnishing, suspending or invalidating the documents of the Competent Persons, being a member of the international related organizations or cooperating with these organizations, engaging in activity of publishing, researching and training about the area of responsibility and making regulations and publishment about these activities.

## **Establishment and Tasks of National Resources and Reserves Reporting Committee (UMREK) Organization of the Committee and Appointment of the Committee members**

### **ARTICLE 4 –**

**(1) The members of the Committee shall meet the requirements provided that** in sub-paragraphs (1), (4), (5), (6), (7), (8) of Article 48 (A) of the Civil Servants Law No. 657 issued in 14.7.1965, are assigned from geological and mining engineering and the other related engineering departments, faculty of economics and administrative sciences and faculty of business administration, finance, political sciences, public administration and law graduates with at least ten years' experience in the profession.

(2) The members of the Committee shall be appointed for a term of three years. A total of two members shall be appointed from among the two candidates to be proposed from each of the General Directorate of MTA and MIGEM, one member to be appointed from among the one candidate to be proposed from each of BDDK and TBB, one member to be appointed from among the one candidate to be proposed from each of SPK and BIST, four members to be selected from among the eight candidates who are mining, geological, geophysics, survey or metallurgy engineer wish to become a member of the Committee and apply to the Qualification and Election Committee established in MIGEM, registered to the professional organization to be proposed by Qualification and Election Committee and one member to be appointed from two candidates proposed by TOBB. The Committee consists of total of nine members who are selected and appointed by the Minister of Energy and Natural Resources among these members. Any member can be appointed a maximum of two times.

## **Tasks and Authorizations of the Committee**

### **ARTICLE 7 –**

(1) The tasks and authorizations of the Committee are as follows:

- a) To establish reliable and feasible mineral resource and reserve information for the prospection, exploration and production of mineral resources and to ensure that the reporting standards are taken into account with financial aspects,
- b) To constantly improve and to update the specified reporting standards (Turkish Code for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves), to establish and implement the systems for the improvement of the standards,
- c) To ensure that Turkish Code for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves comply with international codes for Reporting of Exploration Results, Mineral Resources and Reserves,



- ç) To determine the qualifications required for Competent People and to issue competency certificate,
- d) To train Competent People and to record register scores and to keep records of them,
- e) To review documents related to the applications made to the Committee with the help of working groups and to make decisions,
- f) To establish, develop and implement the required system, policy, strategy and objectives related to the National Resources and Reserves Reporting by taking into account the financial aspects,
- g) To review the reports/projects prepared by Competent Persons, if necessary, suspending/ canceling the certificate of the Competent Person who is misstated, and to inform the relevant authorities,
- ğ) To establish sub-committees to assist working groups in case of need,
- h) To become a member of international organizations relevant to field of responsibility of the Committee or to cooperate with them,
- ı) To carry out training, research and publishing activities in the subjects that are in the field of responsibility.
- i) To present an expenditure plan to the General Directorate on the expenses of the Committee,
- j) To contribute to the related regulation, legislation, studies and to give and form opinions,
- k) To demand information, documents and opinions from public institutions and organizations and natural and legal entity in the required fields,
- l) To determine fees related to the revenues from the Committee's activities and to update them when necessary,
- m) To take the necessary precautions to enable the Committee to carry out activities regularly and efficiently in terms of administrative, financial and technical way and to ensure that the related regulations and legislations enter into force,
- n) To opt for the appointment procedures of Committee' members,
- o) To issue sub-regulatory procedures such as instructions and codes relevant to field of responsibility of the Committee.

(2) The Committee shall act independently while fulfilling its task, making decisions and forming opinions.

(3) National Resources and Reserves Reporting Committee (UMREK) shall have the authority to establish working groups under the Committee when necessary within the scope of its mandate.

## **Tasks and Authorities of the Committee Chairman**

### **ARTICLE 8 –**

(1) Duties and authorities of the chairman is mentioned below:

- a) To prepare the draft work program necessary for the Committee to fulfill its obligations, to present it to the committee, to apply it after its approval,
- b) Presenting the activity report to the committee,
- c) To make proposals to the Committee on issues relating to personnel,
- ç) Ensure that working groups and sub-groups work in a harmonious, efficient, disciplined and regularly, and to ensure (or provide) the organization and coordination between the Committee and the concerned working groups,
- d) To determine the agenda, day and time of the Committee meetings, to attend the meeting, to keep the records, Ensuring the Committee's decisions are fulfilled and monitoring the implementation of those decisions,
- e) To ensure (or provide) the necessary coordination with the (MiGEM) General Directorate of Mining Affairs (GDMA) which carries out all secretariat and financial services of the Committee,
- f) Representing the Committee at official and private institutions (public and private enterprises).

## **UMREK WORKING GROUPS**

### **Organization and tasks of working groups**

#### **ARTICLE 9 –**

(1) All kinds of secretarial services, including the financial affairs of UMREK (National Resources and Reserves Reporting Committee) are carried out by the UMREK secretariat established within the body of General Directorate. Within the body of the UMREK, the following working groups are formed and the Competent Persons who have received the Title of Competent Person from the national reporting organizations and / or UMREK may be employed in the working groups.

- a) Legislation (or regulations) and Reporting Standards Preparation Working Group,
- b) Training and Certification Working Group.

### **PREPARATION OF LEGISLATION (OR REGULATIONS) AND REPORTING STANDARDS WORKING GROUP**

#### **Preparation of Legislation (or regulations) and Reporting Standards The Working Group performs the following tasks:**

- a) Prepare, revise, implement and enforce the communiques of the reporting standards,
- b) To make proposals to the Committee on about its own activities,
- c) To prepare of reporting standards, revisions, and making proposals to the Committee to establish technical and expert committees,
- ç) To ensure (or provide) that reporting standards comply with international standards, developing new standards, and according to this, identify and implement strategies and policies; when necessary, receiving research and consultancy support related to these determined targets, strategies and policies,
- d) To make proposals to the Committee for amendments to the reporting standards,
- e) To conduct the technical examination for the finalization of applications that made and submitting them to the Committee for approval,
- f) Preparing agreements / contracts to be a party of Turkey on the subject and carrying out the implementation studies,
- g) To do other duties given by the Committee.

#### **MEMBERS:**

- 1. Dr. Barış G. YILDIRIM (Chair, Geological and Mining Engineer, UMREK Member)
- 2. Cem Sacit YÜCEER (Geological Engineer, UMREK Member)
- 3. Dr. Mesut SOYLU (Geological Engineer, UMREK Member)
- 4. Muhammet ERİŞEN (Lawyer, UMREK Member)
- 5. Dr. Erol TİMUR (Geological Engineer)

6. Halit Semih DEMİRCAN (Mining Engineer)
7. Ahmet Onur GÜNGÖR (Geological Engineer)
8. Aysu ÇALI (Geological Engineer)
9. Tuğba ÖZCAN (Geological Engineer)
10. Başak ÖZTÜRK (Geophysical Engineer)
11. Dr. Bahadır AKSANI (Mining and Mineral Processing Engineer)

## **THE TRAINING AND CERTIFICATION WORKING GROUP**

**The Training and Certification Working Group performs the following tasks:**

- a) Preparing the Communiqué of Competent Persons,
- b) To implement, enforce, follow up and control competent person training, certification, and preparing Continuous Improvement Communiqué,
- c) To make proposals to the Committee related to its own activities,
- ç) To make or have it made a review for the finalization of applications and presenting to the Committee for decision,
- d) To organize training activities for the development of competent people, perform assessments and evaluations related to these activities, determining objectives and strategies, developing policies,
- e) Organizing scientific meetings such as national and international congresses, seminars, conferences, workshops,
- f) Making other duties given by the committee,
- g) Determining training curriculum and formats for the individuals and organizations (institutions) who provide training.

## **MEMBERS:**

1. Cahit DÖNMEZ (Chair, Geological Engineer, UMREK Member)
2. Atiye TUĞRUL (Geological Engineer, UMREK Member)
3. Kaden EKŞİ (Geophysical Engineer, UMREK Member)
4. Uğur YAYLAÖNÜ (Administrative, UMREK Member)
5. Yusuf Kaan KADIOĞLU (Geological Engineer)
6. Yusuf Ziya ÖZKAN (Geological Engineer)
7. Yılmaz BULUT (Geological Engineer)
8. Nuri CEYHAN (Geological Engineer)
9. Halim DEMİRCAN (Mining Engineer)
10. Zafir EKMEKÇİ (Mining and Mineral Processing Engineer)
11. Hakan AKSULU (Petroleum and Natural Gas Engineer)
12. Mustafa Çelebi TÜRKCAN (Mining Engineer)
13. Ömer PALA (Mining Engineer)
14. Fatih PEKDEMİR (Geological Engineer)
15. Fatih KONCUK (Geological Engineer)

## **ASSOCIATION OF GEOSCIENCES, MINING AND METALLURGY PROFESSIONALS (YERMAM)**

The Association of Earth Sciences, Mining and Metallurgy Professionals (YERMAM) has been established on 04.12.2017 with the aim of bringing together domestic and international professionals working in the field of earth sciences, mining and metallurgy, developing cooperation among its members and cooperating with the "National Mineral Reserve and Resource Reporting Commission (UMREK).

The Association of Geosciences, Mining and Metallurgy Professionals is established with the objective of developing collaboration in economic and technical fields, bringing together domestic and foreign professionals working in the field of geoscience, mining and metallurgy in order to avail themselves of the knowledge and mutual technologies in these fields, developing a collaboration among the association's members and a collaboration between National Resources and Reserves Reporting Committee of Turkey (UMREK).

The Association of Geosciences, Mining and Metallurgy Professionals is the national, private, independent and non-profit association representing the companies and institutions operating in the mining industry of Turkey.

The association also seeks to encourage the sustainable development and the use of better occupational health and safety practices in mining industry with the help of supporting studies, researches, developments and the use of the best available technologies.

The exchange of ideas and know-how as well as the discussion of challenges faced in the mining industry and the mineral industry's concerns are highly valued by the YERMAM. Another main purpose is to increase the technological capability of human resources in the mining industry.

The establishment of such association in Turkey should receive a widespread response abroad and ensure more active attraction of foreign

investment to the mining and geological complex of Turkey and recognition of YERMAM by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO).

With the acceptance of the UMREK Code by CRIRSCO with full movement of the evaluation in the country to international standards, establishment of a professional organization of independent experts and in this regard appearance of the national institute of “Competent Persons” is a major step forward in integration of Turkey specialists into the global geological and mining community.

YERMAM plans to help the sector people gain familiarity with the UMREK Code at a more advanced level. YERMAM present priority is to help develop the skills of Turkish professionals.

## **UMREK Members**

## Mithat CANSIZ – Chairman



Mr. Cansiz graduated from the Faculty of Political Science and International Relations and Faculty of Business Administration with a double major at Boğaziçi University in 1998. In 2003, he completed his Master of Business Administration (MBA) in international management at Munich University. After working as a financial control

specialist at financial control department of Siemens AG in Germany between 2001-2003, he started working as a business development and foreign relations manager in a Turkish-German partnership infrastructure company operating intensively in Turkey between the years 2004-2007. He then continued to work as a chief project director at Investment Support and Promotion Agency of Turkey in between 2007-2010. During this position, he made significant contributions particularly in assessment and analysis of energy and collaborative projects of public-private sector, submitting of aforementioned projects to domestic and international investors and ensuring the active coordination in cooperation with relevant institutions and organizations in that regard. He was appointed as a member of the Board of Directors of Turkish Petroleum International Company (TPIC) on 25 February 2010 and as the General Director of Turkish Petroleum International Company (TPIC) and the chairman of the Board of Directors of TPIC on 17 March 2010. Between the years 2016-2017, he was the chairman of the executive board of Turkish Petroleum Distribution Corporation. He still holds the position of board member of Turkish Energy Company.

Besides that positions, he was the chairman of the executive board of Turkey-Brazil Business Council, vice chairman of the executive board of Turkey-Colombia Business Council and lastly the executive board member of Turkey-Iraq Business Council within Foreign Economic Relations Board (DEİK), which represents Turkey in the international business area.

After being appointed as a consultant at Ministry of Energy and Natural Resources on 22 December 2016, Mr. Cansiz was appointed as the General Director of Ministry of Energy and Natural Resources of General Directorate of Mining Affairs on January 2, 2017. In addition to that, he has been a board member of Eti Maden Enterprises since 4 July 2017 and the chairman of the National Mineral Resources and Reserves Reporting Committee of Turkey (UMREK) since 3 October 2017. Mr. Cansiz has advanced level of English, German, Spanish and Arabic.



## **Dr. Mesut SOYLU – Vice Chairman**



Mesut Soylu, graduated from the Department of Geological Engineering of the Middle East Technical University in 1990, completed his master's degree in 1994 and his doctorate in 1999 at the same department. Dr. Soylu's 27 years of experience has been directed towards base and precious metals exploration in south-eastern Europe, Caucasus and Turkey. He worked for Rio Tinto from 1990 through 1996, initially in Turkey exploring for VMS, epithermal and porphyry deposits and subsequently as Technical Manager for the company in Bulgaria.

From 1996 through 2000, he worked as a consultant specializing in porphyry and epithermal deposits of the Tethyan Metallogenic Belt, with clients that included companies such as INCO, Mount Isa Mines and BHP. Dr. Soylu joined BHP Billiton in 2000 and managed that company's porphyry copper exploration programs in Turkey. He joined Eurasian Minerals Inc. in 2003 and established base and precious metal exploration in Turkey and surrounding countries. During this period, his teams discovered Sisorta H/S, Akarca L/S and several more H/S, L/S and porphyry systems. Later he joined Asia Minor Mining in 2013 as companies' Head of Exploration. He has been serving as an independent QP consultant since 2014. He was involved in designing and negotiation of several joint venture and option agreements with major and junior companies.

Besides, Dr. Mesut Soylu has expertise in; NI 43-101 Technical reports, exploration program management, exploration assessment & target selection, Pre-feasibility Studies, due diligence reviews, QA/QC Management, option and JV agreements, high sulfidation Au deposits, low sulfidation Au/Ag, Porphyry Cu/Mo, Cu/Au, VMS Cu/Pb/Zn (Au/Ag) and lignite deposits.

His affiliations are; American Institute of Professional Geologists (Certified Professional Geologist-CPG), Federation of European Geologists (as a QP), Society of Economic Geologists (Fellow), The Society of Geology Applied (Member) and Turkish Association of Economic Geologists (Founder and Board Member). He has been the vice chairman of the National Mineral Resources and Reserves Reporting Committee of Turkey (UMREK) since February, 2018. Mr. Soylu has advanced level of English.

## **Uğur YAYLAÖNÜ – Member**



Mr. Yaylaönü graduated from business administration department of the Faculty of Economics and Administrative Sciences at Middle East Technical University with a high honor degree in 1998 and started working as an assistant specialist at the department of Corporate Finance of Capital Markets Board of Turkey in 1999. In 2005 he earned his master degree from the Department of International Relations at Atılım University and still holds the position of the head of department of Account Standards since 2014. He has been an Advisory Council Member of International Accounting Standards Board (IASB). He has more than 18 years of experience in valuation, audit and credit rating activities in capital markets.

Mr. Yaylaönü has advanced level of English and French.

## **Cahit DÖNMEZ – Member**



Mr. Dönmez graduated from the department of geological engineering at Fırat University in 1998 and earned his Master of Science degree with the thesis titled “Geology, petrography and geochemistry of the Elazığ magmatics outcropping between Soğanlı-Uyandık (Elazığ)” from Çukurova University in 2006. He is presently continuing his PhD studies in geological engineering department at Çukurova University.

After working as a geological engineer in various private sector companies, Mr. Dönmez started working as a geological engineer in general directorate of Mineral Research and Exploration (MTA) in 2004. As an engineer and a manager he prepared mineral resource and reserve reports for several regions of Turkey. He has more than 25 national and international academic conference and congress presentations and received the Academic Paper Award of Chamber of Geological Engineers of Turkey on April 2015, currently holds the position of the head of department of Mineral Research and Exploration in General Directorate of Mineral Research and Exploration (MTA). He has been the chairman of the Editorial Board of General Directorate of Mineral Research and Exploration (MTA) since 2015.

Mr. Dönmez has been a member of Turkish Association of Economic Geologist and Chamber of Geological Engineers of Turkey and has advanced level of English.

## **Muhammet ERIŞEN – Member**



Mr. Erişen graduated from the Faculty of Law at Ankara University in 2002. In 2005, he earned his M.A. degree in Civil Law at Ankara University and in between 2013-2015 studied Master of Law in securities and financial regulations at Georgetown University. In 2015, he also completed a Master of Business Administration (MBA) at Bahçeşehir University. Mr. Erişen is presently continuing his PhD studies in administrative law at Ankara University.

Throughout his professional career, Mr. Erişen has been working for the Turkish Telecom Corporation as a lawyer and for Banking Regulation and Supervision Agency of Turkey (BDDK) as an assistant specialist, specialist and then chief specialist. He still holds the position of the head of department of Legal Affairs at Banking Regulation and Supervision Agency of Turkey.

Mr. Erişen has two publications named Sub-contractorship Agreement (Adalet Press, 2011) and Banking Debit (The Journal of Turkish Court of Accounts Issue: 83, 2011).

## **Prof. Dr. Atiye TUĞRUL – Member**



Prof. Tuğrul graduated from the department of geological engineering at Istanbul University with a first rank in 1987 and started to work as a research assistant at the Applied Geology division of department of geological engineering, Istanbul University in 1989. In 1995, she got her PhD degree from the same department and later on received her "Associate Professor" academic title in 1999 and "Professor" title in 2005. She is currently the head of Applied Geology division and natural stone laboratory. In 2011, she was a visiting professor at department of geological engineering of Kent State University and at department of mining engineering of Virginia Tech University in USA.

Prof. Tuğrul held the position as a vice chairman which was responsible for Europe at the International Association for Engineering Geology and the Environment (IAEG) in between 2010 and 2014. She was also the vice chairman of the Aggregate Commission within IAEG in between 1998-2004 and has been the chairman of the Aggregate Commission since 2004. Prof. Tuğrul has been the founder member of the Turkish Society for Engineering Geology, which was established in 2014 and still holds this position. She is the advisory board member of Turkish Mining Development Foundation since 2005.

She has over than 150 national and international scientific publications. Seven PhD thesis, five of which were studied on aggregates, were supervised by Prof. Tuğrul. She has given a speech at more than ten international and national congresses or symposium as a keynote/invited speaker.

Prof. Tuğrul has been serving as an assistant editor and referee for many international and national scientific journals. In 2002, she received the "Richard Wolter's" award from IAEG. She participated in organization committee of the several national scientific meetings and the symposium named "Industrial Minerals and Building Stones" (IMBS 2003), which was organized under the sponsorship of IAEG. The 5th Global Stone Congress was organized by Prof. Tuğrul, also the president of the congress, in Turkey, 2014. She served as the chairman of the aggregates, natural stones and engineering geology sessions of several national and international symposiums and continues to carry out her duties. Professor Dr. Atiye Tuğrul can speak English, French and Arabic.

### **Dr. Barış Gazanfer YILDIRIM – Member**



Dr. Yıldırım, who graduated from the Department of Mining Engineering with a first rank and from Department of Geological Engineering of Istanbul University in 2003, completed his M.S. studies on mineral processing at Dokuz Eylül University in 2005.

Dr. Yıldırım, who started his professional career in the mining industry in 2003, was awarded twice with 'New Exploration' and 'Best Project' by Teck Resources Ltd. The integrated metallurgical project in between the 'Highland Valley Copper Mine' and 'Canadian Center for Applied Research (ART)' was also carried out by Dr. Yıldırım.

Dr. Yıldırım worked as a consultant in several companies such as Stratex PLC, Koza Gold, Pasinex Resources and Horzum Mining. By establishing Pasinex Resources in Turkey, he took in charge as general manager and during his tenure actively involved in exploration and production stage of the Pınargözü Lead-Zinc-Copper underground mine. He was a member of Board of Directors in Horzum Mining and Pasinex Resources.

Dr. Yıldırım still serves as the chairman of the Board Of Directors of Organik Mining Inc. which has achieved the first commercial vermiculite production and exportation of Turkey.

Dr. Yıldırım has completed his PhD studies, financially supported by Australian Federal Government and the Anglo America mining company, at Sustainable Mineral Institute of the University of Queensland in Australia and within the scope of his Ph.D. carried out resarches in mines of Chile, Brazil and Canada. His Ph.D. studies were specialized in geometallurgical modeling related to resource and

reserve estimations and their relation to facility efficiencies. Dr. Yıldırım has nine scientific publications and is still Honorary Member of the Sustainable Mining Institute of the University of Queensland. He has advanced level of English.

### **Kadem EKŞİ – Member**



Mr. Ekşi graduated from Geophysics Engineering Department of the Faculty of Engineering at Istanbul University in 1990. Right after his graduation, he started working as an engineer in the Ministry of Public Works and Settlement until 1991. The professional career, which was started in the public sector, continued with Ekşiöğlu EMA Geosciences company that was founded by himself in 1991 with the projects such as mineral exploration and production, provincial and district based earthquake risk analysis, risk area studies, settlement suitability.

Throughout his professional career, he has taken in charge as a member of auditing committee and founder member of MMG, MUSIAD, DEIK, GYODER, Earthquake Foundation of Turkey etc... and has been involved in political and economical activities in several symposiums, scientific activities and published many articles.

Projects carried out by Mr. Ekşi within the scope of electricity, electromagnetic, magnetic, gravity, georadar, seismic methods, drilling and earth science: Thrace Basin natural gas exploration, Sakarya basin natural gas and geothermal exploration, Urfa Harran plain groundwater study, İstanbul Şile Neogen basin mineral (clay, kaolen, bentonite etc.) exploration, coal exploration and reserve determination of Çanakkale Çırpılar Thermal Power Plant Project, reserve and grade determination of Çorum Sungurlu Copper Enterprises, reserve and grade determination of Sivas Chrome Enterprises (in cooperation with İstanbul University), reserve and grade determination of Konya Beyşehir Marble Enterprises, groundwater studies across Turkey to supply water demand of residents and industries, geological-geotechnical study reports prepared for Kartal, Beyoğlu, Eyup, Pendik, Tuzla, Üsküdar and Sultanbeyli districts of İstanbul Province, soil survey and sub-surface studies and geotechnical project implementations prepared for the leading construction companies of Turkey (Ağaoğlu, APY, DKY, Egeyapı, Emlak GYO, Halk GYO, Kiler GYO, Taşıyapı, Tekniyapı, Tepe Construction, Sinpaş, Suryapı, Usta Construction, Yeniyapı etc...).

## **Cem Sacit YÜCEER – Member**



Mr. Yüceer, having over 20 years of experience in all technical and administrative activities such as mining exploration, geological mapping, geochemical sampling, drilling and mine development, graduated from geological engineering department at Middle East Technical University in 1998. He has been a member of the Australasian Institute of Mining and Metallurgy (The AusIMM) and has also been qualified for Competent Person/Qualified Person.

Throughout his professional career, Mr. Yüceer has been working for Teck Resources, Major Drilling, Odyssey Resources, Chessser Resources Ltd., Kalyon Group and Özdoğu Holding as a geologist, field supervisor, general manager and consultant.

Projects carried out by Mr. Yüceer within the scope of mineral exploration: Kestanelik Epithermal Au-Ag (Lapseki Gold Mine hold by Chesser Resources Ltd , then hand over to Nurol Holding), Sisorta Epithermal/ Porphyry Au- Cu (hold by Chesser Resources Ltd. and Eurasian Minerals Inc.), Tavşan Au Project (hold by Chesser Resources Ltd , then hand over to Ariana Resources).

Mr. Yüceer has several membership in many national and international geoscience organizations such as Society of Economic Geologists (SEG), the Prospectors & Developers Association of Canada (PDAC) and Turkish Association of Economic Geologists. Mr.Yüceer has advanced level of English.

**Workshop on UMREK  
26-27 January 2017  
Ankara**

## LAUNCHING SPEECHES

### **MİTHAT CANSIZ, GENERAL MANAGER OF GENERAL DIRECTORATE OF MINING AFFAIRS (MİGEM)**

The General Director saluted the participants and went on to say as follows:

*“The protocol concluded in 2012 between CRIRSCO and this General Directorate laid down the foundations of the National Resources and Reserves Reporting Committee and consequently the “National Resources and Reserves Reporting Committee” shortly called UMREK, has been founded for reporting any mining exploration and operation activities in compliance with the international standards and ensuring such reports to be accurate and reliable, for which the supplementary Article 14 was attached in 2016 to the Mining Law 3213.*



*Our General Directorate has been commissioned to act as the secretariat for this Committee and accordingly prepared the present draft bylaws for establishment of the said Committee and determination of its working principles, powers, rights and liabilities. In a shortest possible time will also be compiled the draft bylaws in consideration of the industrial needs and demands.”*

The General Director finished his speech by expressing thanks to and wishing success of all the participants and those who contributed to the workshop.



**ASS. PROF. DR. ABDULKERİM YÖRÜKOĞLU**  
**DEPUTY UNDERSECRETARY (EX) OF MINISTRY OF ENERGY AND**  
**NATURAL RESOURCES (ETKB)**

The Deputy Undersecretary pointed out that we are a big family with the geologists, miners, financiers, investors and the mining supporter industries and carry the burden of the national economy and continued to say that the mining plays role in almost all the fields and may not be sacrificed at all in the bad and good days and everybody must give effort for the same.

The Deputy Undersecretary is of the opinion that we unfortunately feel the worst shortage of mining. We use the mining products in every field, mainly the energy, ceramics, construction and defense. And for a “Sustainable Development”, our priority is to ensure the “secure supply of raw materials”. Indeed, one may not disregard the environmental issues in this process. We need to draw up a “roadmap of secure mining” in terms of labor health and safety. We have to keep up with the minimum level of mining accidents all over the world.

On the other hand, we can improve and increase the high value-added products of mining, so that we would be able to implement the natural resources strategy.

In this context, we can say that we build up UMREK for integration with the world for improvement of the mining, a multidisciplinary industry.

Following some superficial information on the subject, the Deputy Undersecretary expressed his “blessing” wishes (comprehensive evaluations take place in the workshop close-up speech).



**FATİH DÖNMEZ**  
**UNDERSECRETARY OF MINISTRY OF ENERGY AND NATURAL**  
**RESOURCES (ETKB)**

The Undersecretary launched his speech by the wording *“the Ministry has negated the claims of neglected mining, as we pay the same attention to our mines in addition to the energy”*. He stated that the Ministry collaborates with the Ministry of National Education to open mining branches in the industrial high schools to train helpers needed for the mining industry and underlined the importance of this matter.

The speaker then talked about the workshop topic and pointed out that it was unfortunately late in getting the mines standardized and organized, as the rules or certification and professional standards were not yet formularized. In this context, Mr. DÖNMEZ pointed out that they started up just from very beginning, i.e. the “source”.

While Mr. DÖNMEZ told about the necessity of an international standardization for the banks to raise funds for the mining investments and pointed out that the protocol between MIGEM and CRIRSCO was the first step of such attempts.

The Undersecretary presented the letters of appreciation to the sponsors at the end of his speech.



**I. Day**  
**(26 January 2017)**

## SESSION 1

At the first session, the experts of General Directorate of Mineral Research and Exploration (MTA) (Mrs. Leman ÇETİNER) and General Directorate of Mining Affairs (MIGEM) (Mr. Sezai AYDIN) presented the Source and Reserve Estimations as well as the current situation of our country in view of these stakeholders. The two other speeches were focused on the **United Nations Frame Classification (UNFC) System**. Mrs. Charlotte Griffiths, the Assistant Director, UNECE – Department of Sustainable Energy and Mrs. Mücella ERSOY, an expert from the Turkish Coal Enterprises, presented the opinions on behalf of the United Nations and Turkey respectively.

### **1) EXISTING STATUS FOR SOURCE AND RESERVE ESTIMATIONS - MTA**

#### **Leman ÇETİNER-M. Mete GÜLHAN (General Directorate of Mineral Research and Exploration-MTA)**

The MTA presentation was made by Mrs. Leman ÇETİNER, the Geological Engineer. The headline of presentation is **“Existing Status of Source and Reserve Estimations”**. The matter was elaborated in view of MTA (General Directorate of Mineral Research and Exploration). The speaker first introduced the history of MTA and then explained its capacities and qualifications in the mineral research, exploration and reserve determination, giving a number of actual examples.

Following are the topics elaborated by the speaker within the framework of the workshop agenda:

She told about the MTA source/reserve classification system as well as the UN “Resource Reserve Classification System and demonstrated that the MTA system was successfully adapted to the UN system. By the way, she introduced two publications of MTA (i.e. the Reserve Estimation Methods in Mining and the Adaptation of MTA Reserve/Resource System with the United Nations System).

She shortly told about the methods and technics applicable in the mineral exploration steps (feasibility study, initial survey, preliminary exploration, comprehensive exploration) and presented the “Project Preparation Flow Chart” used by MTA. She defined the flow chart applied by MTA in the Resource/Reserve reporting as follows: database development, geological interpretation, modelling methods, confidence classification, resource

report and reserve report. She also presented the classical resource and reserve chart used by the JORC system.

MTA's Works within the framework of the Process of Harmonization with the International Standards:

- 2002 – Harmonization with the United Nations Classification
- 2007 – Updating of the Resource/Reserve Classification
- 2010 – Laboratory Accreditation
- 2012 – Goodwill Protocol with CRIRSCO
- 2016 – Establishment of Turkey Geological Data and Core Bank

## **2) EXISTING STATUS FOR SOURCE AND RESERVE ESTIMATIONS – (General Directorate of Mining Affairs-MIGEM)**

### **Sezai AYDIN (MIGEM Department Head)**

Like the first speaker, the headline of presentation is **“Existing Status of Source and Reserve Estimations”**. The speaker elaborated it in view of MIGEM.

The speech is based on an overview of the worldwide development of the mining activities and the value of minerals produced in Turkey (we fall within the first 2 countries over the world). He went on indicating the number of existing exploration and operation licenses. Finally, he evaluated the MIGEM legislation and activities within the framework of UMREK.

The speaker historically elaborated the exploration activities under the mining laws. The validity of exploration licenses was 2 years in the Law 6309. There was no financial liability for exploration. However, the Law 3123 (1985) set forth an exploration validity for 30 months, including 3 terms of each 8 months and a project development stage for 6 months. According to the Law 3213 amended with



the Law 5177, a time allowance for 3 years is granted for exploration, extendible for 2 further years. There is no financial liability.

The first subsequent arrangement for exploration comes with the Law 3213 amended with the Law 5995, by which a financial burden is imposed on the licensee. There are such time allowances as 1 year for preliminary exploration, 2 years for general exploration and 4 years for comprehensive exploration. At the end of each year, the licensee is expected to prove the activities specified in the exploration project versus the actual realization of activities for that year. The license is cancelled if such activities are not realized and/or the expenses could not be proven.

The latest arrangement has been effectuated by the Law 3213 amended with the Law 6592. In this context, the time allowance for exploration of 1+2+4 has been extended for 2 years for the feasibility study. The provisions for obligatory activity and expenditure liability have been exactly maintained as in the previous version, while a provision for administrative fine has been imposed instead of license cancellation in case of failure in fulfilling the liabilities. It is obligatory to carry out a 3D ore modeling at the end of the exploration period.

The statement is essential in reporting to MIGEM and is accepted to be valid and accurate unless otherwise is proven. The scope and contents of such reports are subject to the criteria set forth in the Law and Regulations. The Accredited Legal Entities (ALE) are expected to enhance such reports in qualitative and quantitative aspects. The increase in exploration activities comes with the increase of good quality projects too. In this context, it is observed that some worth to support projects emerge.

There is a need to the international reporting standards to attract the financial support for such developed projects. And, it would be ensured with the UMREK Legislation. This system would decrease the risk in mining investments, as reliable data would be compiled for the financing institutions. MIGEM is obliged to ensure a reliable substructure to be established among the investor (licensee), responsible exploration staff and financing institution. It would be possible to grant credit facilities not to the companies, but on the project basis.

The exploration activities handled within the framework of the Mining Law would be performed in line with the existing legislation, as the ALE provisions are reserved.

### 3) SATISFACTION OF THE UNITED NATIONS FRAME CLASSIFICATION (UNFC) NEEDS FOR TOTAL RESOURCE DEVELOPMENT AND INVESTMENT CHANNELS

#### Charlotte Griffiths (UN)

The speaker is the assistant director of the UNECE Department of Sustainable Energy, responsible for the European continent, including Turkey as well as the UN Region of Northern America.

Mrs. Griffiths started her speech by referring to the Sustainable Energy Targets and the Paris Climate Agreement and continued to talk about the UNFC. She pointed out that the name UNFC – “United Nations Frame Classification System for Fossil Energy and Mining Reserves and Resources 2009” was changed to the **“United Nations Frame Classification (UNFC) System for Resources”**. UNFC was defined as a system based on global and generic principles, applicable to the coal, nuclear, oil-natural gas and other fossil energy resources as well as the mineral reserves and renewable energy resources and the injection projects.



It was pointed out that the UNFC developed by the Expert Group on Resource Classification (EGRC) in the UN European Economic Committee (Geneva) was a group of experts comprising of all the users of global resources in reserve/resource classification, including the representatives of governments, academy, industry, international organizations, financial institutions professional unions and societies and the TKI (Turkish Coal Enterprise) from Turkey also took an active role in the management of the experts group.

## **WHY IS UNFC NECESSARY?**

- **Need for common global language for energy and mineral resource estimates**
  - Terminology chaos”
  - What are “proved reserves”?
  - What are “mineral resources”?
- **Increasing overlap between mining and oil & gas industries**
  - Major issue with respect to “unconventional” resources
  - CRIRSCO Template (family of codes eg JORC, PERC) designed for mined solids
  - SPE-PRMS (for petroleum) designed for fluids
- **Long-term planning (at company and national level)**
  - Need to see total resource base for “sustainability”
- **Increasing need to be able to compare renewable energy resources with non-renewable resources**

### **The apparent reserve coverage should be as follows:**

It was told that the UNFC system was based on the below listed three criteria, demonstrated by a graphic with 3 axes, each being divided into 3 or 4 categories and a digital encoding system is used for classification in the course of EFG and each of three criteria of the apparent reserve class has the highest reliability (1;1;1)

1. Economic to extract (E),
2. Feasible technically to extract (F)
3. Geological information (G)

It was stated that it would be possible to make a more detailed classification through the sub-categories of UNFC, but its use was optional.

**It was pointed out that the UNFC-2009 and CRIRSCO templates were harmonized and the both systems were not competitive, but compatible with each other.**

Following are the **stakeholders** of UNFC:

Governments, Financial Unions.

Industry, Energy and mining project designers,

The **UNFC Evaluator/Qualified Person** should have respective experience at the specialist level for the type of reserve under evaluation. In this context, it was reported that there were two guidelines, i.e. UNFC-2009 “**Characteristics for Evaluator Qualification**” (top level guide) and “**Qualified Person Features and Resource Reporting Options**”.

### **Qualified Person Requirements:**

- Disclosure and responsibility,



- Education experience,
- Continuous training and licenses,
- Professional body affiliation etc.

**In conclusion of her speech explaining the role of UNFC, Mrs. Griffith** pointed out that UNFC was developed in an intense collaboration with Turkey and had an important role in long term planning on the total resource basis at the national and corporate levels and that UNFC could be used in market-oriented reporting as it was harmonized with the CRIRSCO family codes and it was a global tool of communication that supports the investors.

#### **4) STATUS OF UNFC AND UNFC ACTIVITIES IN TURKEY**

**Mücella ERSOY (Chief Engineer, Turkish Coal Enterprises (TKI)  
Vice- Chair, UNECE- Expert Group on Resource Classification)**

Currently deployed as the Chief Engineer with the Turkish Coal Enterprises (TKI) and being a co-author of UNFC, she realized the presentation titled **“UNFC and Status of UNFC Studies in Turkey”**, as she represented Turkey in the Executive Board of Resource Classification Group with UNECE.

##### **UNFC's Goals:**

She launched his speech by stating that UNFC is an internationally applicable system, which embraces, like an umbrella, all the classification systems over the world for reporting and classification of the fossil fuel and mineral reserves and resources.



##### **UNFC's principal fields of application:**

- Ensuring the governments have more productive systems to manage their resources,
- Allowing the energy statistics comparable at the international level,
- Contributing for the companies to manage their business processes in a more productive manner,
- Helping to the international financial reporting.

## Turkey Practice in UNFC's Historical Progress

Mrs. Ersoy chronologically told any studies carried out and actions taken by Turkey that was involved in the respective activities after the first version of **UNFC** was published for implementation over the world in 1997 for the solid fuels and minerals following the initial process of preparation between 1992 and 1996:

- TKI tested the first version of UNFC in its own lignite reserves in 1998;
- In 2001, Turkey participated in the Experts Group (now called EGRC) under UNECE;
- In 2002, a UNFC seminar was jointly organized at MTA with UNECE;
- In 2003, TKI implemented UNFC in the Yatağan and Eskişehir Mining Sites and in the same year took place in the Management Board of Experts Group upon election of the TKI representative as the coal group chairman;
- In 2004, TKI participated in updating UNFC with the addition of oil and uranium resources;
- Between 2007 and 2008, TKI acted as the co-resident in the project of matching the CRIRSCO system in minerals and the PRMS system in oil with the UNFC;
- In 2009, TKI participated in the works for development of "UNFC-2009 for Fossil Fuel and Mineral Reserves and Resources" reflecting the results of the above matching process and so became a co-author of UNFC-2009;
- In 2011, the UNECE-Turkey (ETKB, MGEM, TKI and MTA) Joint Workshop was organized, followed by signature of the goodwill protocol between Turkey and CRIRSCO, which was the first step of the UMREK activities today;
- In 2012, the TKI representative was appointed as the Deputy Chairman to represent Turkey in the Experts Group;
- In 2014, TKI took place in the mission that prepared the working specifications of the EGRC's Committee of Technical Advisors;
- In 2016, the UNFC-2009 Document was translated into Turkish and it is still print pending.

In her presentation, the speaker gave some details on the historical progress of UNFC and participation of Turkey in these works.

She reported that the Qualified Person Guidelines were developed for UNFC and an additional guide was being prepared to cover the Social and Environmental Requirements within the framework of the Paris Convention 2016.

In the chapter of **Conclusion** and Suggestions, the speaker gave priority to the actual needs of Turkey. She underlined the need in Turkey to develop an internationally recognized standard to cover not only the geological

criteria, but also the project feasibility and economic criteria and eliminate the terminological chaos and take into account both the market oriented reporting and the inventory reporting.

As for the **Suggestions**, she pointed out that a national committee should be established to represent all the stakeholders considering that Turkey is a country of transition economy and that the first step of legal framework was already taken with the regulations on establishment of UMREK, while there is a need to elaborate the similar efforts of the other countries and carry out any necessary works and studies for harmonization with UNFC and CRIRSCO for the inventory reporting and the market reporting respectively and for a work group on terminology in development of the national standard and the term of qualified person should be defined in the regulations.

**Further works to be performed later:** It was pointed out that the existing reserve and resource estimations in Turkey should be reviewed on the basis of the new national standards to be compiled in compliance with the international standards. In this context, it was depicted how it is important to adapt the Mining Law, arrange the countrywide educational programs, harmonization of the university curriculums and utilization of the mining software advantages and develop a mining management system.



## SESSION 2

The second session clarified the position of UMREK against the financing institutions. Mrs. H. Yeşim AYDIN of BDDK (Banking Regulation and Supervision Agency), Mr. Uğur YAYLAÖNÜ of SPK (Capital Market Board) and Mr. Oğuzhan ALOĞLU of ISTANBUL EXCHANGE delineated the difficulties and expectations for the mining investments in respect of their own organizations.

## **1) MINING CREDIT FACILITIES IN THE TURKISH BANKING SECTOR**

### **H. Yeşim AYDIN (Banks Auditor-in-Chief; Banking Regulation and Supervision Agency-BDDK)**

The credit facilities extended to the mining industry (including quarries) in Turkey have a share of only 1.2% in the total amount of all credit facilities. One may take it as 1% average in consideration of the progress in years. The average maturity is 3 to 10 years for mining with a grace period variable depending on the purpose of utilization. It is known that 72% of the total credit facilities extended to the mining industry have been disbursed by 7 banks.

These data show that the banks hesitate to extend credit facilities to the mining industry. The expressed reasons include the shortage in specialization, uncertain cash flow and fluctuations in commodity sales prices.

As of the credit categories, we see that the project financing and operating capital credits are mostly used.

Due to the lack of specialized teams in the banks, the credit allocation processes are handled as the other industrial and/or commercial credits by the project financing units or departments. Hence, it is impossible to make accurate evaluations specific to the industry.

#### **Credit Allocation Processes:**

- Financial Analysis
- Project Financing Analysis
  - Feasibility study,
  - Technical Evaluations (reserve, etc.),
  - Compatibility of the license validity with the credit facility maturity,
  - Environmental and social effects,
  - In which commodity exchanges the price of the project ore are determined,
  - Historical price movements of the project ore and the industrial expectations,

- Demand level and export opportunities for the project ore,
- Derivative availability (foreign exchange risk)
- Labor accident statistics in the applicant's history
- Compatibility of the credit facility with the corporate business cycle.

#### **Security:**

- Personal warranty of the corporate shareholders,
- Mine usufruct lien,
- Business activity lien,
- Assignment of mine revenues

The lack of specialization for the credit facilities disbursed in mining is tried to be compensated by purchasing services from the independent consultancy companies. On the other hand, site visits are made in accompaniment of the technical consultants experienced in the industry.

#### **Consultancy Services Rendered in Credit Evaluation:**

- Permits and approvals for mining activities,
- Retroactive evaluation of the mine performance,
- Future expectations and estimations,
- Evaluation of technical, social and environmental risks

#### **Problems Encountered by Banks in Credit Allocation:**

- Difficulties in accessing the healthy, reliable and actual data (shortage of technical reports)
- Less number of the properly qualified consulting companies,
- Accidents experienced in the mines,
- Environmental effects of the mine production,
- Risk of interrupted activities,
- Difficulties in determining the future price trends due to the fluctuations in ore and metal prices,
- Unavailability of the long-term contracts for mine sales,
- Insufficient estimations for the analysis of reserve utilization period,
- Conjectural effects of any possible regression in the commodity prices on the company,
- Risk of abandonment of the license.

#### **Bank's Suggestions:**

- To perform any necessary supervision and take measures for the labor safety in order to prevent the mine accidents,
- To formulate incentive systems to ensure automation of the production for labor safety in such investments as need underground mining,

- To make sure that the companies use the derivative instruments compatible with the sales and collection time schedules against any possible foreign exchange risks,
- To also furnish the mining industry with the same “Technical Consultancy Reports” as provided in energy, transportation and infrastructure projects,
- In cases where the credit facility is disbursed against a lien, to determine, according to the international standards, the mine reserve that form the lien guarantee to satisfy the certainty rule for liens,
- To ensure the reliability and monitoring of the data (accurate reporting),
- To arrange the ministerial authorization of the independent consulting companies for preparation of the reserve analysis report in compliance with the international standards,
- To develop educational programs for certification to secure the accurate data production and reporting,
- To conclude agreements to provide consulting services from such international organizations as EBRD, World Bank, IFC, AYB etc. for the mining industry financing/analysis,
- To encourage conclusion of the agreements on sales guarantee,
- To conclude grant loan agreements with the European Union in collaboration with the EU Ministry.

#### **Advantages to be provided by UMREK:**

- Accurate and reliable data production,
- To secure the economic integration of and encourage the more efficient operation of our national mines,
- To increase the amount of financing to be provided by the banks,
- To contribute to the improvement of commodity markets in Turkey,
- To contribute to the capital/financing support to the mining investments in other countries by the companies to be incorporated with the State support in Turkey,
- To form a new placement source for the banking industry in Turkey.

**CONCLUSION: For the time being, the credit facilities are rendered to the companies, rather than the projects in Turkey. UMREK will make the project financing possible.**

## **2) SPK PRACTICE AND EXPERIENCE IN REPORTING, EVALUATION AND LICENSING**

### **Uğur YAYLAÖNÜ (Head of Capital Market Board-SPK Accounting Standards Department)**

The speaker mainly focused on the duties and powers of the Capital Market Board (SPK), the financial system and SPK and development of applicable standards, the efforts for adoption of the International Financial Reporting Standards (IFRS), the current status of independent auditing standards and international evaluation standards in Turkey and the arrangements for real estate valuation in the capital market. In this context, one may point out the following facts for the mining industry.

#### **SPK's Duties and Powers:**

- It aims at securing an appropriate and efficient functioning of the capital markets.
- It determines any rules that should be obeyed by the market stakeholders.
- It ensures that the investors are furnished with necessary information.
- It monitors and controls.

#### **International Standards and Turkey:**

Turkey has adopted the following standards in full compliance with the international standards:

- Accounting and financial reporting,
- Independent auditing,
- Valuation standards

#### **SPK and Mining Industry:**

- Funding of the mining companies through the capital markets
  - It is possible for the mining companies to provide funds from the capital markets by means of public offering and/or issuing capital market instruments.
  - The "Precious Metals Market" under the Istanbul Exchange helps efficient pricing of the metals.
- International Evaluation Standards and Metal Pricing
  - The existing international evaluation standards do not include any special standard or provision for metal pricing.
  - It is commonly assumed that the overall provisions of the applicable standards would be valid even for the metal valuation.
- Rating of the mining companies as per the Capital Market Legislation
  - It is handled by the independent auditors and brokers.
- UFRS- Reserve Declaration

- The available reserve is one of the most important factors in rating of the mining companies.
- UFRS does not make it mandatory to make such declarations.
- However, some exchanges impose liability of reserve declaration.
- The reserve declaration is not mandatory in Turkey.
- Financial Reporting and Mining
  - **Research and Valuation:** acquisition of rights; topographical, geological, geochemical and geophysical survey, exploration, drilling, excavation, sampling, evaluation of the technical capacity and commercial feasibility of ore extraction.
  - **Development:** Any other activities for ore extraction sourcing, processing, transportation and commercial production.
  - **Production:** Any activities implemented for obtaining a marketable product from any source.
  - **Removal and Restoration:** Any activities to be implemented after completion of the mining operations.
- Standards
  - **Main Standard:** Ore exploration and evaluation (IFRS)
  - **Related Standards:**
    - Development Costs (UMS1, UMS38, Conceptual Frame)
    - Production - Turnover (UMS18/UMS11)
    - Stock Valuation (UMS2)
    - Depreciation (UMS16 or UMS38, UFRS Comment 20)
    - Reserves (UMS37, UFRS Comments 1 and 5)
    - Impairment (UFRS6 and UMS3)
    - Consolidation and Mergers (IFRS10, 11, 12 and FRS3)
- Exploration for and Evaluation of Mineral Resources (IFRS 6)
  - It permits going on to implement the previous accounting policies, provided that appropriate conditions exist.
  - It is possible for the beginners to record the research costs in the assets, provided that they fit the definition of asset in the conceptual frame, and any necessary impairment tests are carried out.
  - The improvement costs may also be recorded in assets, provided that appropriate conditions exist.
  - The research and valuation costs may be classified as tangible and intangible asset, depending on the characteristics thereof.
  - The “cost” and “revaluation” method may be used in valuation after recording in assets.
- IASB (International Accounting Standards Board) Plan for Booking of Mining Activities



- The future research projects include a review of the accounting rules for mining activities.
- No amendment in the mining standards is foreseen in the short run.

### **3) FINANCIAL FACILITIES IN THE ISTANBUL EXCHANGE FOR MINING INVESTMENTS**

#### **Y. Oğuzhan ALOĞLU (Istanbul Exchange – Director of Precious Metals and Precious Stones)**

The speaker begun his speech by talking about the “exchange and financing opportunities”. In this context, the existing Istanbul Stock Exchange, Istanbul Gold Exchange and Izmir Derivative and Option Exchange were unified as per the Capital Market Board Law 6362 under the framework of Istanbul Exchange, effective from April 3, 2013.

Istanbul Exchange acts as a joint stock company, owned by the Turkish Treasury by 73% and is open to the international competition. The exchange comprises of four different markets:

- Stock Exchange
- Bond and Bill Market
- Derivative Product Market (Deferred Transaction and Option)
- Precious Metals and Precious Stones Market

The Stock Market extends financing facilities to all the eligible Turkish companies and is devoted to the Turkish culture and traditions. It uses the method of “public offering” of the corporate shares to create financing facilities.

The speaker pointed out that there were only 6 mining companies quoted in the Istanbul Exchange and the three ones thereof are off board, while the other three ones were active. He invited the other mining companies to be quoted in the Exchange. Mr. Aloğlu stated that 1.409 companies were quoted in the Toronto Exchange in Canada and that the Exchange would be ready to do its best in financing of the mine exploration and operation activities, as Turkey is an important country with her available mineral reserves.

According to the information reported by Mr. Aloğlu, the “Asset Based Stock” Exchange is a different type of transaction. This transaction mainly used in public financing in the past has become suitable even for the private sector upon decrease of the public demand in the 2000’s. The product called the “Special Market” is however very suitable for financing of the projects at the start-up stage. It functions as a joint platform

for those who are in need of capital and those who want to invest capital. The members match each other and build up partnerships, so that the financial problems are solved.

By the way, the arrangement in close relation with the mining industry involves the transactions handled in the Istanbul Exchange, formerly the Gold Exchange of Istanbul, for the “precious metals and precious stones”, mainly gold, silver, platinum and palladium. Such transactions are realized within the framework of the “Communique on Precious Metal Standards and Refineries” published in 2006 by the Under secretariat of Treasury. The listing includes the accredited and controlled by the Exchange. Hence, the post-mining activities are also involved for the precious metals.

There are two stages of transaction in practice:

- The precious metal producers may quote their “Dore” products, a kind of intermediary products, with the karat reports in the Exchange.
- They get it processed in the accredited refineries, then import and quote the end product in the Exchange.

The precious metal producers are called to monthly declare their production and such reported figures are confirmed with the MIGEM data at the end of each year.

The reporting started in 2008. 11.2 tons of gold and 259 tons of silver production were declared in 2008. The gold production for 33.5 tons in 2013 was just a peak level. In 2016, the gold and silver productions were recorded as 22.5 tons of gold and 94 tons of silver. In Turkey are not produced platinum and palladium, the other precious metals.



### SESSION 3

In the 3rd session held afternoon, Mr. Hasan YÜCEL (TÜMAD Corp.), Mr. İsmail CİHAN and Mr. Ayhan YÜKSEL presented the comments and opinions of the mining industry, the Chamber of Geological Engineers and the Chamber of Mining Engineers respectively.

#### 1) OPINIONS AND RECOMMENDATIONS ON UMREK

**Hasan YÜCEL (TÜMAD Mining Industry and Trade Inc. - General Manager)**

Mr. Hasan YÜCEL has a speech about the opinions and recommendations of the mining sector. According to his speech;

Mining in our country have come to our minds by work accidents, environmental standards and social impacts. Reasons of the accidents that happen recently are hydrogeological and geotechnical studies that are not compliant with the standards and being not compliant with planned production schedule.

**Our mining profile recently has;**

- Lack of quality in sector
- Not able to present reliable source to investors
- Not a reporting code compliant with international standards
- No resource and reserve reliability
- Depended on foreign sources in mining studies
- Not a transparent study
- Not a reliable database to our underground sources



### **What to do apart from the content of UMREK:**

- Mining Law should be revised based on the international standards with a complete approach.
- Prevent the idle status of mining licenses that are given with the purpose of investment.
- Accrediting is acquired with only international standards not with a law.
- Expertise stuff on every branch should be trained.

At this stage the speaker has referred to a project's flowsheet, exploration stages, reserve studies, environmental studies and recent issues.

### **Opinions and Recommendations:**

- All regulations that are going to be conducted need to have applicable, effective, efficient, globally integrated, competitive fundamentals.
- We should support all foundation and legal regulation which is capable to increase the standards of our sector.
- Applicable format and standards should be the issue of related university departments.
- Current mining license system which causes thousands of different licenses should be revised and a new system should be instead of this. We are aware of regional deposits, there should be a new exploration strategy to explore these sources by working with larger scale studies.
- Union of Chambers Engineers have a serious mission in order to find expertise trained on their professions.

## **2) COMMENTS AND OPINIONS OF THE TMMOB CHAMBER OF GEOLOGICAL ENGINEERS ON FOUNDATION OF THE NATIONAL COMMITTEE OF MINE RESOURCE AND RESERVE REPORTING**

### **İsmail CİHAN (TMMOB Chamber of Geological Engineers)**

The speaker presented the “**Comments and Opinions of the TMMOB-(Union of Turkish Chambers of Engineers and Architects) Chamber of Geological Engineers on Foundation of the National Committee of Mineral Resource and Reserve Reporting**” he prepared in collaboration with Dr. Özcan DUMANLILAR.

After the exchange scandals, i.e. Poseidon/Australia in 1969 and Bre-X/Canada in 1997, the need of standardization of mineral resources has emerged.

**CRIRSCO** is the international association of exploration, resource and reserve standards. In this context, let us examine JORC in this organization;

**JORC (Joint Ore Reserves Committee)** was founded in 1971 in Australia. The JORC Code was initially published in 1989 and then updated in 2012. Following are the committee members:

**1. AusIMM - Australasian Institute of Mining and Metallurgy**

**2. Australian Institute of Geoscientists**

**3. MCA Minerals Council of Australia**

**4. ASX Australian Securities Exchange**

**5. FINSIA Finance Services Institute of Australasia**

The management comprises of total 20 members, including 2 people from each organization.

### **Potential Member Organizations of CRIRSCO**

- They should have an autonomous (self-controlling) structure, in which the professionals of mining and/or mineral exploration industry are members.
- They should adopt its members mainly on the basis of their academic qualifications and professional experiences.
- Their professional qualification and ethical standards should be in compatible with those of the other (internationally recognized) organizations.
- They should have a disciplinary regulation/capacity, covering the power to suspend and/or terminate the membership of a member for the abuse or breach of the professional qualification and/or ethical standards anywhere over the world.

### **JORC Objectives**

- To determine, update and improve the minimum standards for reporting of mining exploration results and mineral resource and reserves,
- To ensure that all the public reports are issued in compliance with this standard,
- To determine the limitations and liabilities of the competent person (QP/CP) to guide him/her.

### **AusIMM Members**

- **Fellow:** 10 years of experience, covering high responsibilities within the last years
- **Member:** 3 years of experience, 3 sponsors (possibility of being a competent person (QP/CP) 2 years later)

- **Graduate** and **Associate** members are not entitled to be competent persons (QP/CP).

**UMREK** should be self-controlled and formed by the completely independent organizations (related professional associations/organizations, financial institutions/entities. It should select its own management and independently take and implement its decisions.

The **Competent Person (QP/CP)** registration, membership fees, professional product listing, education, training, accountability to the peers, penal procedure/sanctions etc. should be regulated, controlled and implemented by the **PROFESSIONAL ORGANIZATION**.

**All the public reports** should be based on the principles of concrete foundation (comprehensiveness), transparency and proficiency.

The **Competent Person (QP/CP)** should have an experience not shorter than 5 years on the ore formation/mine reserve types.

Any registration and disciplinary procedures should be handled by our Chamber for the members. **UMREK** should be so organized. There is no need to adopt the **UMREK** standards in all the reports. The small-scale enterprises are to be considered in this respect.

The **TMMOB Chamber of Geological Engineers** is a **constitutional professional entity** organized in accordance with the Law No. 6235 on the Union of Turkish Chambers of Engineers and Architects and the TMMOB JMO Bylaws 24834. It has 20.000 members, 12 branches and 69 provincial representatives. Since its foundation, it published 70 books, compiled 28 e-books and edited 25 specifications, 4 guidelines and 15 forms. It currently published 2 periodical technical magazines and 2 popular earth science magazines. It organized 70 congresses and announced 17.500 verbal notifications. The Chamber has realized numerous mining works and exploration since 1997.

### **International Standardization Works**

- In 2009, the CRIRSCO, JORC, NI43-101, SAMREC and PERC codes were translated.
- In 2009, the “**Mineral Exploration Results Reporting Standards Workshop**” was organized.
- In 2009, the “**Mineral Exploration Results, Mineral Resources and Mineral Reserves Reporting Bylaws**” was published.
- In 2014, the “**Mining Workshop**” was realized.



- It nominates its own management and other boards and bodies by means of democratic elections.
- The executive board and other councils are appointed and controlled by the general assemblies.
- TMMOB and Chambers are entitled by the respective laws to professionally and ethically control and supervise their members.
- TMMOB and Chambers are entitled to impose professional sanctions on their members.
- This power has been adopted even in the legislation of the Republic of Turkey and the respective laws and regulations are still in force.

The **TMMOB Chamber of Mining Engineers** is the largest, oldest and well-known scientific professional organization of “**mining**” in Turkey with its headquarters (Ankara), 5 branches (Adana, Diyarbakır, İstanbul, İzmir and Zonguldak), 2 District Liaison Offices (Antalya and Sivas), 55 provincial representations, 12 sub-provincial representations, 11 jobsite agents, 16 University agents, 16 University student agents and 16,961 members.

### **Bodies and Functions of the Chamber of Mining Engineers**

- 1- General Assembly
- 2- Headquarters Executive Board
  - 2.1- Branch Executive Board
  - 2.2- District Representation
  - 2.3- Provincial Representation
  - 2.4- Sub-provincial Representation
  - 2.5- Jobsite Representation
  - 2.6- University Representation
- 3- Board of Auditors
- 4- Honorary (Disciplinary) Board

The Chamber comprises of all volunteer leaders of headquarters and branches and volunteer representatives and staff members. The activities are handled by the workgroups comprising of our voluntary expert members. Any reports, information and documentation compiled by the workgroups are presented to the related entities and organizations, mainly the public authority, by the chamber executive boards with the ultimate goal of contributing to the improvement of our members and the entire industry and solving the encountered issues and problems.

### **Scientific Activities of the Chamber (Congresses and Symposia)**

- (IMCET) International Mining Congress and Exhibition in Turkey
- International Coal Congress
- International Mining Equipment Congress



- International Underground Excavation Symposium
- International Drilling and Explosion Symposium
- International Marble and Natural Stone Symposium
- International Labor Health and Safety Symposium
- International Crushed Stone Symposium
- International Mining and Environment Symposium
- International Drilling Symposium
- International Industrial Raw Materials Symposium
- Mining Engineering Training Workshop
- Mining Engineering Field Workshop
- Coal and Energy Workshop
- Boron Workshop

### **Training Activities**

For the professional improvement of the members of our chamber, any on-job training courses are organized on demand through the SEM (Continuous Training Center) of the Chamber.

The Chamber of Mining Engineers collaborates with the “Scientific Committee” comprising of more than 150 scientist academic staff members of the universities. The members of our Scientific Board are also amateurs and voluntary like the Executive Board members.

### **SME Ordinance (United States of America)**

Competent Person is a registered member of SME (Mining, Metallurgy and Search Chamber) or a distinguished member of a professional organization recognized by SME (API).

For a professional organization to be recognized as an API, it must have a disciplinary process that results in the member of this body being able to withdraw from membership or suspend membership. Such as the Chamber of Mining Engineers and the Honor (Discipline) Board of the Chamber. The specialist must have at least 7 years of experience in the field of expertise.

### **Registered Member in Mining, Metallurgy and Exploration Chamber (SME)**

**Registered member definition:** scientist, engineer or technologist engaged in the discovery, production and use of mines, metals and energy resources.

Membership; earth scientists, geologists, mining engineers and metallurgists, environmental engineers and other scientists, engineers and technology experts.

**Any registered member;**

- 1) Have graduated from a US-accredited college or a recognized international university and
- 2) Must have at least 5 years professional experience. At least 3 years of this experience in the position of responsible person is a prerequisite.
- 3) Each registered member must be bound by the ethical guidelines issued by SME. Any conduct or violation of the registered member's contravention of the SME regulation shall be subject to review by the ethics committee and sanctions shall be imposed.

**Ethical Regulation Articles**

- 1) Responsibility for members' welfare, health and safety comes before their responsibility as a professional, private or other member.
- 2) Members should act in such a way as to protect and honor the profession's honor, integrity and reputation.
- 3) Members should only work within their area of expertise.
- 4) Members will develop their professional dignity virtually and will not create an unfair competition environment.

**JORC Regulation (Australia)**

The JORC Regulation was developed by a committee of members of the Australian Mining Metallurgy Institute, the Australian Geoscience Institute and the Australian Mines Council.

The Competent Person is a member or academic member of the Australian Mine and Metallurgy Institute or the Australian Geoscience Institute or Australian Mining Council or a recognized professional organization (RPO).

In order for a professional organization to be recognized as an RPO (recognized professional organization), it must have a disciplinary process that results in the member being able to withdraw from membership or suspend membership. The complaints about the professional work of the expert person are addressed to the disciplinary process of the institution where the expert is a member. Being a specialist is a process based on personal communication. Before conducting a study as an expert, all of the above criteria must be met and the person must explain the qualities that can play this role.

Individuals selected as specialists may face their colleagues and may need to demonstrate that they are competent in their professional activities. If there is a doubt, the person may not act as an expert or may need advice from the professional agency to which he is affiliated. If there is a debate about the expertise of the person who indicates that he is an expert, that

person's expertise can be questioned by a committee formed by the professional organization.

### **CIM (Canada Mining, Metallurgy and Petroleum Institute) Standards (Canada)**

CIM Canada; mining, metal, material and energy sectors. The CIM Standards were prepared by the CIM permanent committee and accepted by the CIM Council. These standards have been made into law by NI 43-101. Anyone who will report resource / reserve in Canada has to report according to this law.

Qualified Person (QP / CP) is an engineer or geologist with a university degree in mining or mining related geosciences or engineering. They should have at least five years of experience in mining exploration, mine preparation or mining project evaluation, or a combination of these.

The mine project and a technical report should have relevant experience (this five-year experience is clearly stated in NI 43-101, but not for a period of time in the CIM's 2014 update). Canada must have a reputation in the profession. In the case of a profession room in the outside country it has to be a member of this room. Membership; an assessment of a person's character, professional competence, experience and ethical behavior, or a recommendation of membership by at least two people.

Approving of professional associations recognized by the Canadian Institute of Mineral, Metallurgical and Petroleum must have a disciplinary process which results in the member of this body being able to withdraw from membership or suspend membership.

The complaints about the professional work of the expert person are addressed to the disciplinary process of the institution where the expert is a member.

Being a specialist is a process based on personal communication. Before conducting a study as an expert, all of the above criteria must be met and the person must explain the qualities that can play this role.

Those who are selected as specialists are required to show their ability to face their colleagues and to be proficient in the professional field. If there is a doubt, the person may not act as an expert or may need advice from the professional agency to which he is affiliated. If there is a debate about the expertise of the person who indicates that he is an expert, that person's expertise can be questioned by a committee formed by the professional organization.

## **RPO: Recognized Professional Organization**

- 1)** It should be an self-controlling organization that includes experts in the mining and exploration industry,
- 2)** Members must be adopted on the basis of their academic qualifications and professional experience,
- 3)** It must comply with the internationally accepted professional expertise and ethics rules,
- 4)** It must have the power to suspend or remove membership of members who violate ethical responsibilities.

**CONCLUSION: The Chamber of Mining Engineers may be classified as an rpo.**

## **Mining Law, YTK, UMREK**

- Mining Law of January 2015
  - o Technical Supervisor removed
  - o An Authorized Legal Entity (YTK) has been introduced.
- Mining Law of the month of August 2016 is in the TBMM
  - o UMREK, Core Knowledge Bank was established and regulations studies started.

## **YTK and UMREK**

- With the amendment made in the Mining Law in 2015, all projects, activity reports and all technical documents to be given to MİGEM and Special Duties will be given through YTK.
- In order to work in YTK, it is necessary to go through the training program determined by MİGEM.
- The existence of diplomas we have received from universities has become a debatable position.
- According to this legislation, many of our colleagues who are here today (even those who work in YTK Trainings) will not be able to prepare projects if they have not received YTK Training.  
The competence of the engineers and their competence are discussed through YOK (Higher Education Institution); we think that it should be discussed through universities and solution suggested.
- With the amendment made in the Mining Law in 2016, Competent Persons (QP/CP), i.e. UMREK, came to the agenda together with YTKs.
- After the YTK and UMREK, not only Mining and Geological Engineers, but also any engineer will be able to operate in the field of mining under the Mining Law.
- New trainings and new dams on Engineering Education that we have taken with YTK and UMREK.
- YOK (Higher Education Institute) is also not activated during the UMREK phase.

- In accordance with Crisco and UMREK, YTK fits exactly to the RPO definitions in Turkey chambers remain disabled.
- UMREK will be regulated as such and will be contrary to the many laws still in force in our country if it is arranged according to the draft and will lead to legal debate.
- For this reason, we are demanding that UMREK is structured according to CRISCO standards.

### **UMREK Provision In Law**

- Includes the Competent Person and the YTK.  
Become a Competent Person but not a Competent Organization.  
Can be seen in all world examples.
- The concept of YTK should be removed from the Law.
- YTK definition should not be included in the regulation.

### **Registry Records**

- Registries of all engineers, architects, tradesmen, traders and industrialists in our country are regulated by the profession chambers to which they are attached.
- This issue is also included in many of your thoughts.

*Registry records of Competent Persons to be authorized by UMREK must be retained by the profession chambers they are affiliated with.*

### **Criminal Terms**

- Profession chambers are authorized to investigate and professionally impose and apply professionally to Engineers, Architects in our country.
- Decisions made by courts, which are independent and legally above, are notified to professional chambers for implementation.
- The investigation and punishment of criminal offenses committed by proficient persons in the professional sense must be carried out by the profession chambers they are affiliated with.

### **UMREK Members**

- Chambers of Mining and Geological Engineers (2)
- TOBB The Union of Chambers and Commodity Exchanges of Turkey (1)
- SPK Capital Market Board (1)
- Stock Exchange İstanbul (1)
- MIGEM General Directorate of Mining Affairs (1)
- MTA General Directorate of Mineral and Exploration (1)
- 7-Person Committee
- CRIRSCO (SME, JORC and CIM) are required by professional organizations in the professional bodies required by the legislation in force in our country.

### **Accredited Professional Institute**

- 1) It should be an organization that includes experts in the mining and exploration industry and can control itself,
- 2) Members must accept on the basis of their academic qualifications and professional experience,
- 3) Comply with the internationally accepted professional expertise and ethics rules,
- 4) Have the power to suspend or remove membership of members who violate ethical responsibilities.

### **Ethical Regulations**

- 1) The responsibility of the members for the welfare, health and safety of the community comes before the responsibility of professional, private or other members.
- 2) Members should act in such a way as to protect and honor the profession's honor, integrity and reputation.
- 3) Members should only work within their field of expertise,
- 4) Members will develop their professional dignity virtually and will not create an unfair competition environment.

### **Why the Professional Associations and Foundations Take Place in UMREK**

- 1-Turkey can install hundreds of associations and foundations and similar names in the same area. Which and what will be taken to the commission?
- 2-The members of professional associations in accordance with the legislation in our country do not have to be a member of professional associations and foundations.
- 3- According to the legislation in our country, professional associations and foundation administrations are free to take or not to acquire the person whom they want. One cannot join the association as it wishes.
- 4-Every association and foundation has a discipline order and can give a penalty to the member according to his / her direction. However, this penalty can only be on membership basis.

In accordance with the laws of our country, no association or foundation member can be punished in professional sense.

### **How many competent persons (QP / CP) are needed in Turkey?**

- Companies with foreign capital will get their projects prepared by QP's in their own country.
- Domestic funded organizations will make projects with the authorized QP/CP's from UMREK.
- How many projects should be done by QP over the next 30 years?
- How many QPs are in our country? Which countries are certified?

- How many engineers will get a certificate from UMREK after they have been installed and when will they become recognized under the CRISC's umbrella.?

The answers to these questions need to be identified in the administrative structure of the UMREK.

- 15-20 Mining Engineers
- 20-25 Geological Engineers

All of these are certified from abroad, so even if UMREK is established, there is no need to get a certificate from here. APPROXIMATE TOTAL 50 ENGINEERS

- After foundation of UMREK, it will be enough for Turkey to have so more engineers to be QP.

### **Questions**

- How will the incomes determined in the regulation and the incomes of this commission and subcommittees be covered?
- How much will 50 people pay and the salary of this commission and subcommittees will be paid?
- How many times will 50 people be trained per year and the education revenues received from them will be paid the salaries of this commission and subcommittees?
- How many people will have the committees specified in the regulation draft?

More QP/CP staff will be needed to fulfill the tasks outlined in the draft.

**The answers to these questions need to be found.** We know that our country and our Ministry are able to meet these expenses. However, effective use of public resources rather than duplicate and unnecessary expenditures will be more appropriate. We undertake as a room that we will carry out all kinds of jobs and transactions of Competent Persons (QP/CP) free of charge in order to protect the rights and interests of our members.

### **Suggestions**

- We expressed our concerns in the process of enacting UMREK, now we are in the process of UMREK and we must abide by it.
- UMREK should consist of representatives of 7 institutions mentioned above.
- Representatives from the Professional Organizations should have QP competence.
- Ensure that secretariat work and operations are carried out by the professional chambers so that the costs of the UMREK can be met.

- It is structured to be built on the most suitable structuring rooms for CRISCO.
- We believe that CRISCO's subcomponents of CRISCO will also adopt this recommendation.
- If it is decided that a representative of your home should be located in the UMREK.
- The President of the Chamber and members of the QP/QC shall not take part in the UMREK.
- The Chamber representative in the UMREK will have QP/CP competence or these qualifications.
- The Chamber Representative will not charge any fees from the UMREK. This fee will be given as a scholarship to the students who take Mining Engineering Education if it is required to take the law.





## SESSION 4

At the fourth session, the last session of the day, Dr. Prof. Dr. Mesut SOYLU, Mine Geologists Association, Yusuf Ziya ÖZKAN (DAMA Engineering) explained the process of mineral resource and reserve estimations, Sermet İLHAN explained the importance of three dimensional mine planning. The last speaker, Dr. Barış G. Yıldırım gave information about geometallurgic modeling.

### 1) TURKISH ASSOCIATION OF ECONOMIC GEOLOGISTS OPINIONS ON UMREK

#### Mesut SOYLU (TAEG – Turkish Association of Economic Geologists)

The lecturer started his speech by summarizing the latest developments about UMREK. After briefing international standards, he continued TAEG's opinions about the subject.

#### Chronology

- December 13<sup>th</sup>, MIGEM requested TAEG's opinions on draft UMREK
- December 16<sup>th</sup>, Meeting organized by undersecretary of Ministry of Energy Mr. Abdülkerim Yörükoğlu about UMREK workshop.
- December 19<sup>th</sup>, TAEG sent opinions on UMREK to MIGEM.
- December 22<sup>nd</sup>, meeting in MIGEM about UMREK regulation.



#### International Standards and Global Status

Creating, developing and managing international standards on mineral resource/reserve estimations and reporting exploration results are important subjects.

#### Why Needed?

- In order to have mining and exploration companies present and manage their resources and to reach investment sources, there should be a common language and terminology for the business.
- Mining and exploration require risk and are open for manipulations.
- Secure and safe investors rights.,

## **Some Manipulations and Scandals in the past**

- Bre-X Indonesia, 1996
- Cartaway West Africa, 1996
- Timbuktu, West Africa, 1997
- Delgarito Mexico, 1997

International stock markets, finance and investment foundations supply investment to many mining projects.

These foundations;

- Examine project process
- Control exploration and resource estimation methods in terms of international standards and regulate and approve the finance of these projects.
- Many foundations to regulate standards.
- Self-audited independent organizations.
- Most known reporting codes;
  - National Instrument 43-101 (Canada)
  - Joint Ore Reserves Committee Code – JORC (Australia)
  - Code for Reporting of Mineral Resource & Mineral Reserves – SAMREC (SA)
  - Pan European Reserves & Resource Reporting Committee – PERC (EUR)
- Although first reporting standards initiated in USA, Australia was the first and leading country to define, regulate and announce resource/reserve estimation and exploration reporting standards.
- Reporting standards and codes have major similarities and they accept each other's codes.
- Most of the countries are member of CRIRSCO that is accepted as major authority on international reporting standards and resource/reserves reporting.

The reporting code systems have same purpose and have basic similarities.

**Transparency:** information has to be clear, comprehensible and reachable.

**Materiality:** all calculations must be presented as clear and measurable scales.

**Qualification:** Reports are prepared by internationally recognized and qualified geologist (QP/CP), or under supervision and/or approval of QP.

In the world, “Qualification” is always prerequisite for all organizations in order to announce exploration results, drafting technical reports and resource/reserve estimation.

These organizations name qualified persons as;

- QP (Qualified Person)
- CP (Competent Person)
- CPG (Certified Professional Geologist)
- Pgeo (Professional Geologist)

### **TAEG’s Opinions and Proposals for Draft UMREK Regulation**

- Such regulation is definitely needed in the sector.
- Forming the UMREK within the Ministry’s body may cause problems internationally as it will be regarded as dependent.
- TAEG as an independent association, became member of European Federation of Geologists in 2016 and opened Euro Geologist title opportunity to the members.
- TAEG’s PERC membership application is pending
- TAEG supports all activates for international report standards.
- **Purpose**; is to define ways and rules for UMREK’s formation, management, membership quality, mission time.
- **Scope**; covers formation of UMREK, management, appointing members, their membership periods.
- **Base**; regulation is drafted based upon 04.06.1985 dated and 3213 numbered mining law and additional item on 20 August 2016.
- YTK; authorized organizations; Item 4, Item 6-3 and Item 6-5. In international standards, qualification is appointed to persons not organizations such as YTK.

Formation of Commission Item-5. The commission should consist of mainly geologists and few mining engineers. Rest of the disciplines such as finance, metallurgy, hydrogeology, sociology, environment public relations should be supporting main commission.

Item 5-2. The commission chair is appointed by the minister. This does not fit with independency.

Item 7. Subunits formation.

- Regulation and reporting standards formation unit
- Training and certification unit; very have duty, this must be structured carefully.

- Record and audit unit.
- Item-9. Incomes. When possible number of members is considered, the income from the members will be limited.
- This will require heavy work, therefore main and subunits consist professionals.

Item-10. Final Provisions;

- 10-9 the commission admin is responsible to the minister
- It should be clarified that the reports submitted to MIGEM will be included to UMREK or not.
- Temporarily Item 1. These members are appointed by the minister.
- Becoming self-audited independent structure.
- UMREK's long term mission?
- Period of transition from ministry to independent structure.
- Financing of commission and sub-commission members.

## **2) CENTENNIAL SEARCH FOR A RELIABLE MINERAL RESOURCE AND RESERVE ESTIMATION**

### **Dr. Yusuf Ziya ÖZKAN (DAMA ENGINEERING CORP.)**

The speech of the speaker who shared his unique experience in the mineral exploration issues related to Turkey is "Centennial Search for a Reliable Mineral Resource and Reserve Estimation". Dr. OZKAN, after many years of experience at MTA, continues to work in search of DAMA Engineering Corp. Looking at the search, resource and reserve studies from a historical perspective, we shed light on our current practices.

Reporting standards; can be defined as a set of principles and rules that must be adhered to in order to report mineral exploration results and mineral resource and reserve estimates in a reliable, comparable, consistent and balanced manner. Establishment of reporting standards is of great importance for the report users (policy makers, planners, investors, financiers, financial analysts) to



make the right decisions about mineral exploration result and mineral resource and reserve estimates.

In addition, the standards are also important in ensuring that common language is used between the preparers and users of these reports and facilitating communication.

Therefore, attempts have been made for centuries to classify mining resources and reserves and to set standards for public (public) reporting. Historical processes of these searches differed from country to country and in parallel with the technological developments in search and estimation methods, there are significant steps in reporting standards.

Mining in Anatolia BC is known to date back to 8900. For this reason, Anatolia is known as the crown of mining. For example, on the top of Diyarbakır Ergani Çayönü, copper mining was carried out 10,000 years ago. In ancient times, however, mining is a small scale and it is the way of easily recognizing the mine on the surface, designing the mine and removing it without any planning. Mining is a physical work and there is little need for information.

### **First Half of the Twentieth Century**

Until the twentieth century, there was no need for work on estimating mineral resources. The major mine-producing countries in the world have developed systems for classifying mineral reserves to meet their own needs and to meet their own information needs. Thus, different definitions and classifications, different rules and standards are formed in each country. These can be divided into "east / USSR" system and "western" system. Resource / reserve concept and development of standards followed a path parallel to the global development in Turkey.

When it came to 1900, the first concept and classification of reserves was born. The former USSR system, one of the oldest classifications of mineral reserves in the world, began with the creation of a special committee of the USSR Geological Committee at the beginning of the 1920s. The system was developed in 1928 as a result of years of continuous work. In 1928, the Geological Committee determined the mineral reserves as A1, A2, B1, B2, C1, C2 according to geological information and economic usage criteria; the sources based on the preliminary diagnosis are classified into P1, P2, P3 according to the degree of reliability of the research data. This system is supported by guidelines and guidelines for implementation in various types and complex beds to provide clear criteria for the classification of mineral resources and reserves.

In the same period, a classification based on a different approach occurred in the USA and western countries. According to Blondelvelv Lansky (1956); During the Second World War, a standard terminology and classification was established throughout the country in the United States by the US Mining Bureau and Geological Survey Institute and it became official in 1947.

There was no exploration work in the early. Extraction galleries were being searched for production. Since the reserves were mainly determined by horizontal and vertical preparatory works, the confidence level of the reserves was related to the number of sides exposed by the mineralization. The reserves were divided into proved, probable and inferred ore depending on the size of the panels, ceilings and basement galleries and halls where the production was made. The initial concept and classification of reserve was as follows.

**Proved Ore:** Determined by four sides.

**Probable Ore:** Determined by three sides.

**Possible Ore:** Determined by two sides.

Hervert Hoover concepts developed in this period in the reserves classification adopted in 1909 in Turkey was based on classification. In these classifications, which are also the basis of present-day concepts and classifications, mineral reserves were separated into "probable reserves, inferred reserves and proved reserves" depending on their increased level of reliability.

First mineral resource and reserve estimates in Turkey began with the establishment of the MTA Institute in 1935. Based on the Olsner's work on the MTA between 1935 and 1938 (3130 meters galleries, numerous short sampling pits and drillings), the "Bolkar Mine Reserve Estimate" made in 1938 is the first of its kind. This was followed by Ergani (copper) and Guleman (chrome) deposits in 1939. Keban silver lead in 1940, Üçköprü chrome in 1957 and Küre copper in 1959 were used with these methods.

## **Second Half of the Twentieth Century**

In the second half of the twentieth century; revisions were made in the system. The USSR changed the reserve classification system several times and in 1981 it restored the basic structure. The last amendment was made in 2008.

Similarly, in the United States, the American Geological Society (USGS) observed the system developed in 1947, in 1956, 1972 and 1973. In 1976 it was named as McKelvey's box. The system, which makes the first clear

distinction between mineral resources and reserves, is regarded as the pioneer of CRIRSCO compatible systems. In this period, the MTA has also adapted this system and its different versions.

MTA has introduced, by two publications (both Caner G.) in 1976 and 1983, the development of the concepts of reserve, grade, producible, mineral resource and reserve classification.

In the second half of the twentieth century, revisions were made on the one hand and developments affecting reliability on the other hand. The second half of the 20th century was the period when drillings gained weight. During this period, mining calls started to be made mainly with soundings. Reserve estimates based on drilling data carry greater risks than estimates based on operational readiness studies, due to uncertainties in geological and grade continuity between drills. For this reason, serious problems arising from the reserve calculations in the majority of the deposits which are still in the period of crawl and which are taken into operation by high risk reasons and decisions on these values have arisen, many of them have been closed. Examples in Turkey are Uludag tungsten, Haliköy mercury, ÇİNKUR lead-zinc and Mazıdağı phosphate.

The need to make reliable estimates has also explorars' led researchers' attention to estimation methods and led to the emergence of geostatistical estimation techniques. Although the history of geostatistical methods dates back to 1950, it had not been widely used in the world until 1970. After the 1980s, the development of computers began to allow the use of kriging methods. The use of geostatistical methods in Turkey during the period 1970-2000 have remained at the MSc and PhD thesis, mining industry practices began after 2000.

With the introduction of mining programs including resource reserve and estimation modules, three-dimensional modeling of mineral deposits and the development of multiple block models have been made possible. In addition, computer applications of resource estimation techniques have been presented by many methods including polygonal methods, IDW and kriging. The resources can then be converted into reserves, mining design and production planning can be done.

Just as in every first one, the forecasting and reporting mistakes have also occurred in these studies. Many problems arise due to insufficient data, problems in the quality of the data, insufficient geological understanding, incorrect application of the estimation method, misclassification, not knowing the rules, not obeying the rules and deliberate behavior. It has even been seen that grade values have been assigned to blocks 40 meters

from the sound. This is due to the lack of a geological model based on assay walls. The UK Institution Mining and Metallurgy (IMM) changed the standards used for the reporting of mineral resources and reserves.

### **Turkey Joint International Standards and Harmonization**

New quests and trends have begun to manifest themselves at the beginning of the year 2000. In 1989 the "Regulation of the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves Standarts" (JORC) was published in 1991 and the "Guidance on the Exploration Results, Mineral Resources and Ore Reserves Reporting" of the US, Society Mining, Metallurgy and Exploration (SME)

Towards the end of the twentieth century, in parallel with the increasing globalization, the increase of international investments and the development of trade necessitated the estimation and reporting of the reports of mining sources and reserves produced in different countries in the same rules. Since the 1990s, two international systems have been independently developed. These:

- United Nations Framework Classification System (UNFC)
- Standards and regulations developed by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO).

### **The United Nations (UNECE)**

The first initiative of the United Nations was in 1979 and failed because it did not match up with the established systems of the countries. In 1992, the United Nations Economic Commission for Europe (UNECE) initiated a second study called the United Nations Framework Classification System. The first version was accepted in 1997 in Geneva. This system is a three-dimensional reserve / resource classification system consisting of 36 classes as shown by a numerical coding. The UN Classification System (UNFC) contains all possible mineralized materials, including "non-economic" and even "undiscovered" resources.

In 2002, the MTA published its resource and reserve classification system by adapting it to the United Nations System. Since 2001, TKI had been participating in UNECE work within the framework of the UNFC System in 2001, TKI recalculated its existing reserves according to the UN Framework Classification system. As a result, the coal reserve, which is reported to be 7.95 billion tons according to geological reliability only, decreased to 5.7 billion tons. The difference is resulted from that the previous resource estimation includes 13.8 million tons of uneconomic material in today's conditions.



**Classification** are as follows:

- 111 Proved Reserves
- 112 Probable Reserves
- 221 Measured Resources
- 222 Indicated Resources
- 223 Inferred Resources
- 334 Exploration Results

### **CRIRSCO Compatible Systems**

Meanwhile, CRIRSCO systems have also emerged and have been affected by it. While CRIRSCO is suitable for short and medium-term plans; in the case of long-term planning, the UN is feasible for the UNFC classification system.

In Turkey in the 2000's, it has been directed to CRIRSCO compatible systems and in 2009 by the Chamber of Geological Engineers "Mineral Survey Reporting Standards NI43-101" has been published. On September 24, 2010, JORC Committee member Bill SHAW made a presentation at the conference organized by MADENBIR is an association engineers.

### **Briefly;**

- It depends on investors, financiers, financial analysts and public institutions to make the right decisions, to develop correct policies, to report reliable mineral resources and reserves.
- There is a need for common language (definition, classification and standards) for global cooperation.
- CRIRSCO compliant mineral resource / ore reserves reporting regulations and guidelines are the most appropriate systems.
- CRIRSCO standards is compatible with Turkey's 100-year traditional line.
- A better system search can continue with the world under the CRIRSCO roof.

### **Reliable Resource / Reserve Estimates**

- Mine design and mine planning,
- Investment decisions can be made in mining,
- It is necessary for the financial reporting of the mineral assets (mine/resource/reserves) that form the basis of the values of the mining companies.

## **Conclusion**

An important step has been taken towards the preparation of reliable, balanced, internationally valid and comparable reports with the establishment of UMREK. At the same time, this development will also enable the elimination of barriers to Turkish engineers in the labor market by joining our professional organizations in the international accreditation chain.

From this point of view, UMREK is an opportunity for the professionals of the professions related to mining and mining to compete with the world in the service delivery and the use of an international common language, the opening of Turkish companies to the world (acceptance in foreign stock markets) It must be seen. It should also be aimed at contributing to the improvement of the public image of the sector, taking into account that the sector places greater responsibility for self-regulation and supervision.

On the other hand, Turkey's 100-year- traditional line is compatible with the CRIRSCO standards. CRIRSCO standards represents the point that searching for reliable reporting arrive today, but it is not possible to say it is a perfect system that guarantees this. Undoubtedly, searches for better reporting system will continue. It would be better for Turkey to continue its search together with the world under the CRIRSCO's umbrella.

***Reporting of Mineral Resources and Reserves Using a Standard Definition and Classification System is of high importance.***

## **3) IMPORTANCE OF MINE PLANNING**

### **Sermet İLHAN (MDT Mining Corp.)**

Mr. İLHAN used the sub-heading “**If you fail in planning, then you plan failure**”.

- He expressed it under the following titles:
- Definition of mine planning,
- Importance of mine planning,
- Why do we fail?
- How should mine planning be done?
- Selected 3D views

## **Conclusion**

The **Mine Planning** is not only the mine designing and time scheduling. Mine planning is the engineering design work that a typical interdisciplinary study will apply throughout the life of the mine. These disciplines are geology, geotechnics, geophysics, mining, ventilation, economics,

metallurgy, service sector, other engineering. Strategic and tactical planning is very important in mine planning. Each shows difference in content and purpose. Planning is made short, medium and long term depending on them.

Steps to discover, build (build-install), extract, process, sell and rehabilitate constitute "Mine Value Chain". The success of each step constitutes the basis of its success. Mining is a risky business and each step is under the influence of uncertainties. The investor creates uncertainties such as political, location, science and technological, geological, financial, economic, construction, metallurgical, mining, market, social and environmental risks.

Natural resources and minerals on earth and underground are the greatest need of every creature living in nature. It is necessary to increase the share of the Gross National Product of Nationality, which is around 1.5% of the mining in our country, in today's conjuncture. Therefore, it is vital that our underground and overland riches are evaluated in a correct, sustainable and planned way. We can summarize the **importance of mine planning** with the main headings as follows:

- Mine planning is crucial in order to have materiality, transparency, competency and code-compatible mineral resources and reserves. Mine planning is also crucial for the assessment and reporting of identified mineral resources and reserves in accordance with international standards and codes. The objective here is to ensure that the report is produced in a quality, reliable and auditable manner.
- Mining is important to be economically feasible.
- To have sustainable, responsible, safe and healthy operation.
- Mine planning is important to be an owner of an environmentally conscious and negatively impacted business
- It is important to be a socially responsible and society-acceptable business owner. It is important to ensure that the impact of employment and added value on the subject and the environment is shared correctly with the community at the outset of the project.
- Mine planning is crucial to keep the risks and uncertainties continuing from the beginning of the operation and the life of the mine under control and take the necessary precautions.
- Ultimately it is important to be a first-class business owner in global dimensions.

## **Why do we fail?**

The biggest reasons why we cannot succeed despite the planning we are trying to implement, in fact, the necessary hardware and sufficient knowledge, can be summarized as follows:

- In the definition of mine planning, there will be many parts of mine planning. It is very important to understand the cooperation and unification of disciplines of these parts. Thus, as mentioned, mine planning is an engineering design that provides added value for the mineral resource and reserve mine life through the integration of different mining disciplines.
- Try to make the detailed feasibility studies to be done shortly before the mine is planned (rushed).
- The lack of use of 3D engineering design software and the fact that data exchange is not healthy, especially since the integration of software running in different formats is not provided.
- As a result, poor co-operation of disciplines within mine planning.
- Planning rather than directing and directing production (eg, grading changes, pollution, cross-section excavation, etc.).

If we elaborate in more details the **technical disciplines that form the basis of mining to work without integration**;

- The ore found is being studied by different mining disciplines throughout the mining value chain, both in terms of resource and reserve and each discipline tries to create data that reveals this asset most economically using different software and solutions.
- In such an environment that is not integrated;
  - Difficulty of sharing data created in different systems arises.
  - It causes different business processes to be applied in different disciplines.
  - The use of these files and tables for data transfer will increase.
  - It is impossible to avoid the tendency to average because the model and all the information are not collected.
  - Different scenarios will also take time to work on the data.
- Depending on all these, it is natural that both the cost of the desired results increases and the suitability and reliability of the results decrease due to time loss.

## **How should mine planning be done?**

First of all, strategic and tactical planning, which is the first step of planning, needs to be done. We can say that the target is determined strategically with the shortest description and this tactical goal is realized.

### **Importance of Collaboration and Integration in Mine Planning:**

- Once the disciplines work together and integration of the systems into a collaborative data base is made available, the information can be integrated with enterprise resource planning (ERP) planning and enterprise analysis optimization programs that can be consolidated, correlated, transported, transferred and used outside of mining.

The most important goal of integrated mine planning is to ensure cooperation between the disciplines as well as cooperation and integration within the systems. As a result,

- The right information at the right time, the right information exchange.
- Communication between computer, human and machine is strong.
- Ensuring effective solidarity and coordination among the disciplines.

### **In consequence;**

- Mine planning is crucial in order to have reliable, transparent, auditable and code-compatible mineral resources and reserves.
- Detailed feasibility studies in accordance with codes and standards need to be undertaken with sufficient time for accurate strategic and tactical decisions to be made.
- Database integration and interdisciplinary collaboration should be adopted as a basic principle at a time when technology is so strong in today's mining.
- 3D mine planning software programs should be widely used by engineers.
- Integration and sharing of different systems and software in today's mining has become very important.

## **4) GEOMETALLURGICAL MODEL: CHALLENGES IN RESOURCE AND RESERVE CALCULATIONS**

**Dr. Barış G. YILDIRIM (Organik Mining Corp.)**

The presentation is an outlook to the future of geometallurgy. The integration of different disciplines is not a new idea for industries; many examples can be found in different industries such as mechanic - electronic; electronic – communication; biology and medical science. The geometallurgy is the equivalent of such multi-disciplinary approach in mining industry and the root goes back to early 70s with the mine to mill studies. This paper is discussing the possible new direction of geometallurgical approach for the use of mining industry.

The decreases of grade and increases mineralogical complexities within ore body support the necessity of orebody characterization and geometallurgical modelling. But current direction of geometallurgy does limit the use of such a powerful application. The current studies focus finding solutions to predict the process performance by integrating geological variabilities with the processing test results and plant performance. The links are mostly statistical and dependent on historical plant performance. The future direction is proposed in this paper to calculate the maximum value of given domain rather than trying to predict the plant performance which is very much dependent on the operator; mechanical factors and ore variability's.



The current vision is more focused to mine planning. As a result of that the predictive modelling is driving the geometallurgy to be able to plan the mine based on the proxies how the mined material is going to perform at the plant. But this limit the potential benefit of multi-disciplinary approach. The future vision of geometallurgy should be driven on the possibility of real time value calculation for each tone of material mined and real time ability to make an adjustment in the process for maximizing the value from the material mined.

## **II. Day (27 January 2017)**

The session on January 27, 2017 was dedicated to the speeches to be delivered by the guests from abroad.

## SESSION 1

From CRIRSCO. Harry PARKER gave a general information about CRIRSCO. The second speaker, Mark HOWSON, described the Pan European Reserve and Resource Reporting Commission Standards (PERC). Experiences of the European Geological Federation with the PERC system is described by Michael U.C. Neumann.

### 1) INTRODUCTION TO CRIRSCO

#### Dr. Harry PARKER (CRIRSCO)

Dr. Parker is an expert who is known as the master of mining geology and geostatistics who is also QP and who has also served as president of CRIRSCO. The first talk in the first session was titled **"Introduction to CRIRSCO"**.

CRIRSCO is the abbreviated name of the "Committee for Mineral Reserves International Reporting Standards".

CRIRSCO was founded in 1994 as a Mineral Definition Working Group at the 15th Congress of the CMMI (Mining and Metallurgical Institutions). The objective was and still is the creation and promulgation of common standards for the public reporting of Exploration Results, Mineral Resources and Ore Reserves. CMMI was disbanded in 2002. But work continued under the name of CRIRSCO. In 2007, Council of Mining and Metal became a strategic partner.

Countries are aiming to increase the calls with CRIRSCO, attract investors and develop.





The international character of the mining industry is:

- Multinational mining companies,
- Global finance,
- Leading producers for commodities.

There is a need for common set of standards for public reporting.

### **Financial Centers:**

Major international financial players (stock markets) are:

- Canada: TSX + TSXV
- United Kingdom: LSE + AIM
- Australia: ASX
- South Africa: JSE
- US: NYSE / NYSE Mkt.
- Hong Kong is the secondary list with HKEx (Kaz Minerals, Vale, Glencore, South Gobi Energy Resources) in Asia.

There is a necessity to lighten the mineral resources and reserves in the stock exchange. These include:

- Annual reports,
- Applications for exploration and mine licenses,
- Initial public offerings.

In such **reporting**, the following common **features** are sought:

- Accurate and efficient reporting,
- Reports that emphasize materiality and transparency.
- QP / CP (Competent person – university degree in geoscience, mining and metallurgy engineering, minimum 5 years of experience in the field and a member of a self-regulating professional association).

**CRIRSCO** has the following National Reporting Organizations (NRO's) (10 members):

- Australia
- Brazil
- Canada
- Chile
- European Union
- Kazakhstan
- Mongolia
- Russia
- South Africa
- USA

- Negotiations with Mongolia have not yet been completed and contact with China was established 8 years ago. Training is provided to Chinese geologists and relations with different ministries are maintained for the regulation of legislation. The period of participation in the system has been 9 months for Kazakhstan, 6 months for Brazil and 3 years for Russia.

### **International Reporting Format November 2013**

All national organizations agree on this format and include:

- Exploration Results
- Mineral Resources
- Ore Reserves
- Public Reports
- Competent Person (QP / CP)
- Exploration Target
- Scoping Study
- Pre-feasibility Study
- Feasibility Study

### **National Codes and Standards Adopted by Capital Markets**

- Australia: JORC, NI43-101 / CIM, PERC, SAMREC
- Canada: NI43-101 / CIM, Chilean Code, IG7, JORC, PERC, SAMREC, NAEN
- Chile: Chilean Code
- European Stock Exchange: All CRIRSCO codes
- Hong Kong: JORC, NI43-101 / CIM, PERC
- Johannesburg: SAMREC
- New York: IG7
- Singapore: NI43-101, JORC, PERC

CRIRSCO and UN Framework Classification were harmonized between 1997 and 2009.

### **CRIRSCO's Key Features**

- CRIRSCO promotes best practices in public reporting of mineral exploration, resources and reserves.
- **Objective:** To create mineral estimates that support reliable inventory of minerals used by mining companies in their exploration and development activity.
- Signed by a **competent person** (QP/CP)
- To clarify the distinction between resource and reserve.
- It does not contain “uneconomic” and “undiscovered materials.”

### **CRIRSCO Activities:**

- Annual meeting (with the participation of 2 people from each national organization)
- Meetings of countries participating in CRIRSCO:
  - 2013 Colombia
  - 2014 Mongolia
  - 2015 Brazil
  - 2016 India
  - 2017 Indonesia
- Workshops on public reporting are open the public.
- Other workshops and meetings:
  - 2014 Goa International Seabed Authorities Conference
  - United Nations Mineral Resources Experts Group Annual Meeting
  - International Accounting Standards Board.

### **The National Reporting Organizations (NRO) must have the following criteria for CRIRSCO:**

- Produce and be responsible for maintaining a reporting standard that is compatible with the Template\* and which is recognised as the standard for Public Reporting, or has the wide support of professional bodies, in the country/region.
- Agree to conduct international consultation with NROs represented on CRIRSCO before making amendments to its National or Regional reporting standard.
- Include credible, self-regulating, professional bodies that provide disciplinary systems and codes of ethics that govern the behaviour of Competent Persons or equivalents as defined in the Template.
- Commit to engaging in CRIRSCO activities.
- The Recognized Professional Organizations (RPOs) vet applicants for Competent Person status to ensure potential Competent Persons have the relevant qualifications to act as a Competent Person
  - admissions
  - ensure continuing education, professional development
  - investigate ethics complaints and administer discipline; have the power to expel a member

## **2) PERC (PAN-EUROPEAN RESERVES & RESOURCES REPORTING COMMITTEE)**

### **Mark HOWSON (PERC Executive Secretary)**

Mr. HOWSON, who is the Executive Secretary of the Pan-European Reserve Resource Reporting Committee (PERC - Pan European Reserves + Resources reporting Committee), talked about PERC in his speech.

## **PERC is**

- Established by professional geologists, and mining and processing engineers
- Of Europe but not of the European Union
- A 'not-for-profit' organisation (absl) registered in Brussels
- Administrative support is provided through the offices of the European Federation of Geologists, in Brussels
- PERC raises funds for its work from training events, consultancy/project work and sponsorship.

## **PERC Structure**

There is a management team consisting of the Chair, Deputy Chair, Executive Secretary and Treasurer. There is a trustees committee composed of three person. There are five recognized professional organizations (RPOs) and two observer organization members.

### **Recognized Professional Organizations (RPO)**

- European Federation of Geologists (EFG) (3 members)
- Geological Society of London (GSL) (2 members)
- Irish Geologist Institute (IGI) (4 members)
- Materials, Mineral and Mining Institute (IOM3) (2 members)
- Co-opted Members (5 members)



### **Observer Member Organizations**

- Fenno Scandian Review Board
- Turkish Association of Economic Geologists (MJD)

### **PERC Subcommittees**

- Training
- Financial and Regulatory
- Sponsorship

### **Some Activities where PERC is represented and introduced:**

- EU Cost MINEA Workshop 6-7 October 2016 Budapest

- Mines and Technology Conference London, 29 November-1 December 2016
- Stonechange 2016 Conference, Carrara, 16-17 June 2016

### **Reports issued as per the PERC Standards**

- Many metallic deposits have been made to comply with PERC standards. There are many nonmetallic minerals in Europe.
- Secondary deposits (wastes etc.) are also mentioned.
- Many mining companies in the world are based in Europe origin.
- PERC has the following sections:
  - Coal,
  - Diamond,
  - Industrial raw materials,
  - Cement raw materials and Construction raw materials,
  - Energy minerals obtained by bituminous shale and other mining methods,
  - Metallic or nonmetallic minerals produced by solution mining,
  - Dimension stone, ornamental and decorative stones,
  - Mining or other waste materials of potential economic value.

### **UMREKs Development:**

- PERC understands that Turkey (UMREC) needs to have its own standard or code, and its own CRIRSCO representation.
- PERC can offer assistance with training - a major strength.
  - Its standard course can be adapted to any CRIRSCO Standard or Code.
  - Familiarity of PERC members with other codes, e.g. JORC etc. is due to past work experience.
- PERC believes that UMREK can be supported to develop its own code.

## **3) EUROPEAN FEDERATION OF GEOLOGISTS (EFG) AND PERC STANDARDS**

### **Michael Neumann (EFG- European Federation of Geologists)**

The speaker represented the European Federation of Geologists in the Workshop and delivered the speech titled “**EUROPEAN FEDERATION OF GEOLOGISTS (EFG) AND PERC STANDARDS**”. He started his speech by introducing EFG and told its relations with PERC in the second part of his speech.

### **EFG-European Federation of Geologists:**

- The voice of the European geoscientists.
- Non-governmental, professional Organisation

- Established 1980, based in Brussels / Belgium
- 24 National Associations representing 25 countries as members
- Main aims are to contribute to a safer and more sustainable use of the natural environment, to protect and inform the public and to promote a more responsible exploitation of natural resources.
- The guidelines to achieve these aims are the promotion of excellence in the application of geology and the creation of public awareness of the importance of geoscience for the society.



### **EFG's Vision:**

EFG's vision is to provide three main points in the activities of professional geologists:

1. Environmental responsibility
2. Contribution to public safety and education,
3. Commercial liability.

**EFG's Members:** The newest members are Turkey (Mining Geologists Society) and Bulgaria. As of November 2016, it has 43.339 members.

### **EuroGeol Basis:**

- Academic qualification
- Professional experience
- Ethical codes
- Continual Professional development

### **Eurogeologist's Requirements:**

- Recognized University degree or equivalent qualification,
- Education and professional experience, not less than 8 years,
- To become a member of a national association of EFG,
- Support of two sponsors.
- Annual proof of continuous professional development.

## **EFG and PERC**

- PERC was established with the participation of four professional organizations in Europe (EFG, IGI, GSL, IOM3).
- Now registered as a not profit association with an address in Brussels.
- Members are all volunteers, no paid staff.

## **PERC Standards Determine:**

- Mining companies' public open reports (stock market)
- Exploration Results
- Mineral resource
- Ore reserves

## **EFG/PERC COMPETENT Persons Requirements:**

- Membership in a RPO (EFG, IoM3, GSL, IGI or other recognised professional organisation) that:
  - requires compliance with professional and ethical standards
  - has disciplinary powers, including the power to expel a member
- Min. 5 years relevant experience;
- The principle of self-certification;
- The principle of peer review.

## **EFG, PERC and ROPO:**

- PERC is a member of CRIRSCO.
- CRIRSCO (Committee for Mineral Reserves International Reporting Standards) is an international 'umbrella' committee which coordinates the work of national reporting organisations that define public reporting standards.
- ROPO is Recognized Overseas Professional Organisation

## SESSION 2

Dr. Harry PARKER; Explained CRIRSCO format and Mark HOWSON gave a general overview of International standards and explained the role of governments in the creation of these standards.

### 1) INTERNATIONAL REPORTING FORMAT

#### Dr. Harry PARKER (CRIRSCO)

##### Why the Template?

- To assist candidates for CRIRSCO membership in preparing a National Reporting Code
- To maintain in one document agreed core definitions (**bold**) and guidance (*italics*)

##### National Reporting Codes

- Maintained by National Reporting Organizations in member countries
- Must follow CRIRSCO Template requirements for public reporting:
- May contain minor differences reflecting laws and practices in host country. National Reporting Organizations conduct mutual collaboration to make code changes

##### What is a Public Report?

- Public Reports are reports prepared for the purpose of informing investors or potential investors and their advisers on **Exploration Results, Mineral Resources or Mineral Reserves**
- They include, but are not limited to annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations

##### Purpose of Public Reports

- The Template provides a minimum standard for Public Reporting. Public Reports must contain all information which investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making of a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Mineral Reserves being reported

##### Principles for Public Reporting

**Transparency:** Transparency requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, so as to understand the report and not to be misled



**Materiality:** Materiality requires that a Public Report contains all the relevant information which investors and their professional advisers would reasonably require, and reasonably expect to find in a Public Report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Mineral Reserves being reported

**Competence:**

- Public Reports must be based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics and rules of conduct
- Public Reports should be approved by Competent Persons

**Competent Persons**

- A Competent Person is a minerals industry professional and member (membership grade to be established by the National Reporting Organization) of a Recognized Professional Organization with enforceable disciplinary processes including the powers to suspend or expel a member
- A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking

**Exploration Targets**

An Exploration Target is a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade or quality, relates to mineralisation for which there has been insufficient exploration to estimate Mineral Resources

**Exploration Results**

- Exploration Results include data and information generated by mineral exploration programmes that might be of use to investors but which do not form part of a declaration of Mineral Resources or Mineral Reserves
- This is common in the early stages of exploration when the quantity of data available is generally not sufficient to allow any reasonable estimates of tonnage and grade to be made. Examples include discovery outcrops, single drill hole intercepts or the results of geophysical surveys
- Reports must include relevant information such as exploration context, type and method of sampling, sampling intervals and methods, relevant sample locations, distribution, dimensions and relative location of all relevant assay and physical data etc.

## **Mineral Resource**

- A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction
- The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling

## **Inferred Mineral Resources**

- An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling
- Geological evidence is sufficient to imply but not verify geological and grade or quality continuity
- An Inferred Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve

## **Indicated Mineral Resources**

- An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application.
- A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors.
- Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation

## **Mineral Reserve**

- A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource
- It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors

## **Probable Mineral Reserve**

- A Probable Mineral Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource

- The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve
- A Probable Mineral Reserve has a lower level of confidence than a Proved Mineral Reserve.

### **Proved Mineral Reserve**

- A Proved Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors
- A Proved Mineral Reserve represents the highest confidence category of reserve estimate

## **2) INTERNATIONAL STANDARDS AND DUTIES RELATED TO THE USE OF THE STATE**

### **Mark HOWSON (PERC General Secretary)**

They are currently negotiating with Kazakhstan, Mongolia, India and China to establish and implement CRIRSCO standards. It has been included in recent days in Turkey.

CRIRSCO is working with the National Reporting Organizations (NRO) to establish standards in countries. The main task of these organizations is to bring together professionals. They must be autonomous, they must be able to create their own management and be able to conduct their own supervision. Their finances must also be provided by them.

It is a fact that the national organization, which is the partner of CRIRSCO, is an organization other than governmental affairs. In some states, the driving force of the government is needed at the beginning. This happened in Kazakhstan and Mongolia. Occasionally, conditions such as prolongation or recoil may occur. In Mongolia, the state and private organization went parallel. The progression of the government from the advanced stage of the process can vary according to the country.

### **National Reporting Organization (NRO):**

- Reporting standards
- Advisory boards
- Must have its own legislation
- Must have responsibility and obligation

### **Government's Position:**

- 1) To create the substructure of mineral entity database,
  - State reporting

- Mineral potential
- Strata minerals
- Public policy

## 2) Regulation of legislation

- Timings and actions
- Investment Conditions
- Land permissions
  - Ensuring that resources and reserves are opened to the public.

## SESSION 3

Mark HOWSON describes the duties and authorities of competent persons (QP) in the third session of the next day's session. The same speaker was also informed about the QP reports at the same session.

### 1) DUTIES AND AUTHORITIES OF COMPETENT PERSON (QP)

**Mark HOWSON (PERC General Secretary)**

#### Why are Competent Persons needed for reporting?

- I. **Mineral commodities and occurrences are diverse:** Copper, gold, iron ore, diamond, nickel, phosphate, uranium, lead-zinc-silver, coal, industrial raw materials, construction raw materials, dimension stones.

**Is anyone a specialist in all of deposits?**

- II. **Stages of development need different skills:** Exploration, delineation, Conceptual Study, Scoping Study, Pre-Feasibility Study, Feasibility Study, Commissioning, Production, Closure

**Require:** Geological knowledge, mining expertise, processing and metallurgical expertise, legal understanding, environmental management, commercial and economic knowledge, social/cultural awareness

**Is anyone responsible for all of these activities?**

- III. **Different reports have different audiences:** Geological reports, Internal project reports, management planning reports, Investment and strategy reports, State inventory reports, External statements and reports for investors.

**Is anyone writing all of these reports?**

#### WHAT IS A COMPETENT PERSON (QP/CP)

#### REQUIREMENTS FOR A QP/CP:

- **A minerals industry professional**
  - Often a geologist or mining engineer

- Employed to work with mineral deposit occurrences in geological environments
- Exchanges & sharing of information with other countries & companies
- **A member of a Recognised Professional Organization (RPO)**
  - Appropriate membership level
  - Requires academic qualifications, professional experience & peer scrutiny
  - Subject to ethics and disciplinary codes
- **Minimum 5 years relevant experience**
  - Style of mineralization
  - Type of deposit
  - Activity or area of technical input which that person is undertaking

## **WHAT ARE THE RESPONSIBILITIES OF A COMPETENT PERSON**

### **Preparing Competent Persons Reports**

- Issued by owners of mineral assets
- Provide information on Exploration Results, Mineral Resources & Mineral Reserves
- Reports are any public announcement that includes or relies on this information
- Reports are prepared at different stages of project development and operation

### **Exercising judgement in providing external information**

- Ensuring that information available is properly considered and reasonable conclusions are drawn, supported by objective views

### **Upholding the principles of transparency, materiality, competence and impartiality**

- The core principles inherent in the CRIRSCO aligned standards

### **Enabling balanced and reasoned investment decisions**

- Information is provided to enable investors and/or professional advisors to make informed decisions

## **COMPETENT PERSON ACTIVITIES**

### **REPORTING (Primary Responsibility)**

- May be annual, or for specific purpose
- Include 'first time' reporting, bond issues, results updates, divestments, privatization, press releases, etc.
- Exploration geologists report exploration results
- Mining (or estimation) geologists estimate and report mineral resources
- Mining engineers estimate and report mineral/ore reserves

### **LEADING A TEAM (Co-Ordinating Other Specialists)**

- Can include other Competent Persons

- Oversees and directs work on those not Competent Persons in their own right
- Could include metallurgists, environmental engineers, economists, marketing experts, etc.
- Responsibility for the work included in reports done by others

## **ORGANIZING AUDITS AND REVIEWS (Considering All Matters In Reports)**

- Legacy information
- Geological confidence
- Modifying factors
- Experience from similar or analogue deposits can be important in making assumptions about poorly drilled deposits or unknown aspects in initial stages, but can also be misleading.

## **THE COMPETENT PERSON CONSENT**

### **Necessary for all reports released**

Confirms the name of the Competent Person, professional qualifications, and experience relevant to the report

### **Can be a stand-alone statement**

### **Can be included as a compliance statement in the report**

## **2.) COMPETENT PERSON (QP/CP) REPORTS**

### **Mark HOWSON (PERC Executive Secretary)**

Speaker's second speech at this session was headed "Competent Person Reports".

### **Introduction**

- The Competent Person consents to:
  - Public reporting of minerals information to guide investment in development and extraction,
  - That upholds principles of transparency, materiality, competence and impartiality,
  - Supported by appropriate qualification and technical experience of the deposit type, style of mineralization, stage of development and all other aspects of risk and influence – the 'Modifying Factors'.

### **What is a CP Report?**

- A detailed technical document to inform investors and their advisers of relevant aspects of a mineral project.
  - **It upholds main principles of:**
    - **Transparency** - sufficient information, clear and unambiguous.

- **Materiality** – all that is relevant that would reasonably be required, or expected, for a reasoned and balanced judgement on investment by investors and their advisers.
- **Competence** – as discussed earlier
- **Impartiality** - not unduly influenced by the entity that commissioned the report, all assumptions documented, disclosure of all material aspects including any financial interest in or relationship with the owners of the project being reported.
- Extract or summary of above CP Report and supported by it.
  - **For press releases, annual reports etc., typically:**
    - Exploration Targets - drill intersection lengths and their grades (+/- qualities)
    - Mineral Resources & (Ore <sup>JORC</sup>) Reserves – Tonnages and their grades (+/- qualities)
    - Classified in 5 categories (Figure 1), not aggregated, nor repeating same material.

## Technical Contents List

- **Canadian NI 43-101 has a report template form: NI 43-101F1**
  - Mandatory table of contents with 27 sections (“Items”)
  - In each item, explanation of information to be given.
  - Generally similar content to Table 1 below.
- **All other CRIRSCO standards & codes include a ‘Table 1’ This is:**
  - “Checklist of Assessment and Reporting Criteria” (JORC)
  - Mandatory to complete all sections, or “if not, why not?”
  - I strongly recommend this for PERC and all CRIRSCO codes
- **“Risk / Opportunity Checklist” (PERC)**
  - Reflects needs of investors – they do not need details for details sake
  - Do need to know risk areas and levels that may affect the outcome of investment,
  - which risks have been addressed, which do not matter and

## A CP Report should demonstrate the competence of the CP to write that report

**SME:** The report should be supported adequately by text, figures, tables, sections, and maps to demonstrate competence by conveying material information in a transparent manner.

Figures of any type should contain appropriate explanatory information in the form of titles and/or captions.

**TABLE.1**

- **Context & History**
  - Who was the report prepared for and why?
  - Project description outline
  - Previous work and its reliability
  - Previous, existing and/or nearby operations.
  - Location, geography (e.g. in a city?) climate & environment.
- **Legal Aspects and Tenure**
  - **Issuer's rights**
    - Prospecting, mining, environmental licenses & permits
    - Land ownership, access, infrastructure rights
    - Security, present & future & and legal proceedings
    - Cultural, wilderness, parks or other impediments
- **CP Knowledge of Project**
  - Visits made
  - The extent to which CP has personally verified the data
- **Deposit Sampling & Data**
  - Surveying, drilling, trenching, logging, sampling
  - Locating, analysis, assaying, testing, quality control & assurance, data accumulation, verification & storage
- **Exploration Results**
  - Access & ownership rights, geology, mineralogy, geophysics, geochemistry, drilling, environmental liability.
  - Reporting balance to avoid unrealistic expectations
- **Audits or Review**
  - Independent technical assessment of data & methods
  - Valuable safeguards for the investor
- **Geological estimation- Mineral Resources**
  - Database integrity. geological interpretation (+alternatives) modelling, estimation (+appropriateness), validation, accuracy, values of multiple products - deleterious minerals
- **Mine Planning-Mineral Reserves**
  - Cut-off grades, qualities or value. Evidence and/or assumptions of dilution, recovery, access, geotechnical (slopes, stability, support), hydrogeology, equipment, safety
- **Processing & Metallurgy**
  - Flowsheet (new / conventional), recovery & upgrading factors
  - deleterious minerals, environmental impact, health & safety
- **Economics**
  - Land lease / purchase, Royalties, taxes, prices, penalties, transport & treatment, Capital & operating costs, revenues, Financial model & analysis



- **Market**

- Demand, supply and stocks. Customer & competitor analysis. Price & volume forecasts. If market cannot accommodate max. quantities, adjust Reserves.

- **Other Modifying Factors**

- Natural risks – earthquakes, flooding, volcanos, climate
- Infrastructure – transport, power, water, employees
- Environment – land use, groundwater, discharges, visual
- Social – local-national employment & economy changes
- Governmental – local-national mining policy & perceptions

- **Specialised Minerals**

- Diamonds

## **Conclusions:**

### **A CRIRSCO-compliant CP/QP Report:**

- Should inform non-technical investors and advisers
- Assesses uncertainty in all aspects of mining investment,
  - Which includes risks and opportunities
- With particular focus on geology and mining
  - it classifies mineral quantities according to confidence,
- So that reported information upholds the main principles of transparency, materiality, competence and impartiality.



## SESSION 4

In the last session, Dr. Parker described the Ethics Guidelines, Reliability and Risk Analysis of Resource and Reserve Classification, Reevaluation.

### 1) ETHICAL CODES AND DISCIPLINE RULES

#### Dr. Harry PARKER (CRIRSCO)

The subject of this speech by Dr. PARKER was "**Ethical Codes and Disciplinary Rules**". SME (Mining Engineers Association) started with ethical codes.

#### **SME Ethical Codes:**

- First responsibility and the highest duty of members shall at all times be the welfare, health and safety of the community.
- Members shall act so as to uphold and enhance the honor, integrity and dignity of the profession.
- Members shall perform work only in their areas of competence.
- Members shall build their professional reputation on merit and shall not compete unfairly.
- Members shall apply their skill and knowledge in the interests of their employer or client for whom they shall act, in professional matters, as faithful agents or trustees.
- Members shall give evidence, express opinions or make statements in an objective and truthful manner and on the basis of adequate knowledge.
- Members shall continue their professional development throughout their careers and shall actively assist and encourage those under their direction to advance their knowledge and experience.
- Members shall comply with laws and government. They will work in harmony with the decisions of the Exchange and other regulatory agencies. They will work in harmony with the decisions of the Exchange and other regulatory agencies.

#### **SME Discipline Procedure:**

- Complaint is referred to Ethics Committee.
- Ethics Committee conducts an investigation.
- Member is informed of complaint and hearing is scheduled.
- Hearing takes place
- Ethics Committee determines whether Ethics Code has been violated by clear and convincing evidence; if not there is no further action.

- If there is clear and convincing evidence Ethics Committee may:
  - Warn or reprimand the member,
  - Suspend membership for period of not more than 12 months
  - Expel the member
- Findings by courts, government agencies, stock exchanges constitute clear and convincing evidence, but member can seek to rebut the finding.
- Suspensions or Expulsions must be approved by SME Executive Committee.
- Member may appeal a decision of the Ethics Committee to the Executive Committee.
- Ethics Committee and Executive Committee may publish findings.
- Executive Committee shall respond to court orders, requests for information from government agencies, stock exchanges.
- Ethics complaints are rare.

### **Rules for the Preparation of Technical and Scientific Documents: NI43-101 Section 2.1**

- All disclosure of scientific and technical information on a material mineral property must be:
  - Prepared by or under the supervision of a Qualified person
  - Approved by a Qualified Person (QP / CP)
- How involved should you be to take responsibility for “supervising the preparation of information” by others?

### **NI43-101 Section 3.1**

- All written disclosure of scientific and technical information on a material mineral property must:
  - Name the QP/CP that prepared/supervised preparation of information
- State the relationship of QP/CP to the issuer.  
If you named in the new release, then you should agree with the all of the contents of the news release.
- NI 43-101 does not work without commitment by QP/CP
- Securities law puts reliance on QP/CP to help insure integrity of the securities market.

## CLOSE-UP SPEECH

### Ass. Prof. Dr. Abdülkerim YÖRÜKOĞLU (ETKB)

ETKB Ex Deputy Undersecretary Ass. Dr. Abdülkerim YÖRÜKOĞLU said to the closing speech, "Mining is a sector that ponders the economy and the industry". As mining production value in the twenty-eighth among 132 countries of Turkey, have said that the tenth in terms of the diversity of minerals. The deputy assistant deputy has correctly explained that the goal is to rationalize all resources by stating the necessity of using natural resources for sustainable development.

"Mining is a risky, dangerous and multidisciplinary sector and for that reason they have argued that the reliability of reports in the sector and the adequacy and adequacy of report makers should be questioned". "We will also open the door to safe mining."

According to the Deputy Undersecretary, The construction of Resource and Reserve Reporting (UMRE) in National Mines has started with the Law and Regulation (UMREK) which will be issued and will gain an advanced position with the Commission (UMREK).



**Workshop on UMREK  
25 August 2017  
Ankara**

## SESSION 1

### 1) UNFC BASED COMPREHENSIVE MINERAL MANAGEMENT SYSTEM IN TURKEY - To Support Innovative Production, Environmental Consciousness and High Growth

**Mücella ERSOY (Chief Engineer, TKI  
Vice- Chair, UNECE- Expert Group on Resource Classification)**

**Hari TULSIDAS (United Nations Economic Commission for Europe)**

### Sustainable Development Goals: The 'Standard Model' for Planet Earth

We still rely on century old models which assure essential products and services only for a chosen few. Therefore, 3.5 billion people today have no access or unreliable access to energy. UN reforms kick started by the new Secretary General in 2017 focuses not on the processes, but on the actual outcomes.

### Mining and the society: Eroding thrust and confidence

### Ban on mining: Mining is seen as an undesirable activity

Mining bans have become part of State policies

#### Philippines bans open-pit mining as minister toughens crackdown

Estela Dela Cruz and Manilla Sempio Jr

3 MIN READ



FILE PHOTO: A view of mud and ore smogues at a port in Iba City, Zamboanga in southern Philippines February 5, 2017.

John De Castro/Phil Press

MANILA (Reuters) - Philippine Environment Secretary Regina Lopez said on Thursday she will ban open-pit mining in the country, toughening a months-long crackdown on the sector she blames for extensive environmental damage.

#### El Salvador becomes first country to ban all metal mining

Cecilia Jimenez | Mar. 30, 2017, 3:02 AM

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The "Tiradentes Square" in El Salvador. (Image Shutterstock)

Lawmakers in El Salvador, Central America's smallest nation, have passed a law that bans all mining for gold and other metals, making the country the world's first to impose such a broad prohibition on the extraction of minerals, environmentalists and human rights groups said.

## **Mining and Zero Waste: Art of the possible**

- Mining drains out value and creates waste
- End product is a mountain of waste
- Zero waste solution has to start somewhere!

The Canada Mining Innovation Council has launched “Towards Zero Waste” that has support from major mining companies. This has collaboration from industry, universities and government. The goal is to move to net zero waste from mining and minerals processing in the next 10 to 20 years.

## **Mining and Innovation: Future proofing resources**

- Decreasing productivity
- Uncertain demand
- Markets in a flux
- Only innovation can sustain productivity

## **10 top challenges to mining: Building a futuristic industry**

- Social license to operate
- Shareholder value
  - Partnerships
  - Shared vision
  - Transformative business models
  - Embracing digital revolution
  - Assuring security in operations
  - Healthy and inclusive workforces
- Integrated management systems
- Productivity and growth

The top 10 trends mining companies will face in the coming year, Deloitte, 2017

## **Why UNFC? Part of a global movement for increasing performance**

- The structure to understand and manage the mineral sector
- Applicable horizontally and vertically to the sector
- Embeds all project risks and opportunities

UNFC promotes clear thinking and a shared vision

## **Resources redefined: Art of rediscovering value**

- Reserves and resources by themselves are not important
- “Comprehensive recovery” increases available reserves
- No “peak resources”

How can the reserves and resources be turned into socio-economic value?

### **UNFC Advantages: A view in 3 dimensions**

- Provides definitions, rules and guidelines
- Not a single mineral deposit is same

Each mineral deposit needs a defined progression pathway

### **Resource progression: The missing element**

- The pathway all the way through production
- Consider the full life-cycle from the start

Who, why, when, where, what and how?

### **Recovery from wastes: Anthropogenic Resources are wealth not discovered**

- Secondary sources for energy or raw materials
- UNFC specifications for turning “waste” into wealth

SDG #12.5 - “by 2030 substantially reduce waste generation through prevention, reduction, recycling and reuse.”

### **Social and Environmental Guidelines: The essential dimension**

- UNFC Social and environmental guidelines



### **UNFC Adoption: Increasing use of UNFC**

- State Commission on Mineral Resources of the Russian Federation (GKZ) has bridged its oil and gas classification system to UNFC. GKZ has announced it will bridge its new national solid minerals classification also to UNFC.

- Ukraine has been using UNFC for many years now.
- The Nordic countries (Norway, Sweden and Finland) have developed standard sub-regional guidelines for applying UNFC to the minerals sector, to making ‘green mining’ a reality and to provide a pathway for demonstrating carbon emissions reductions.



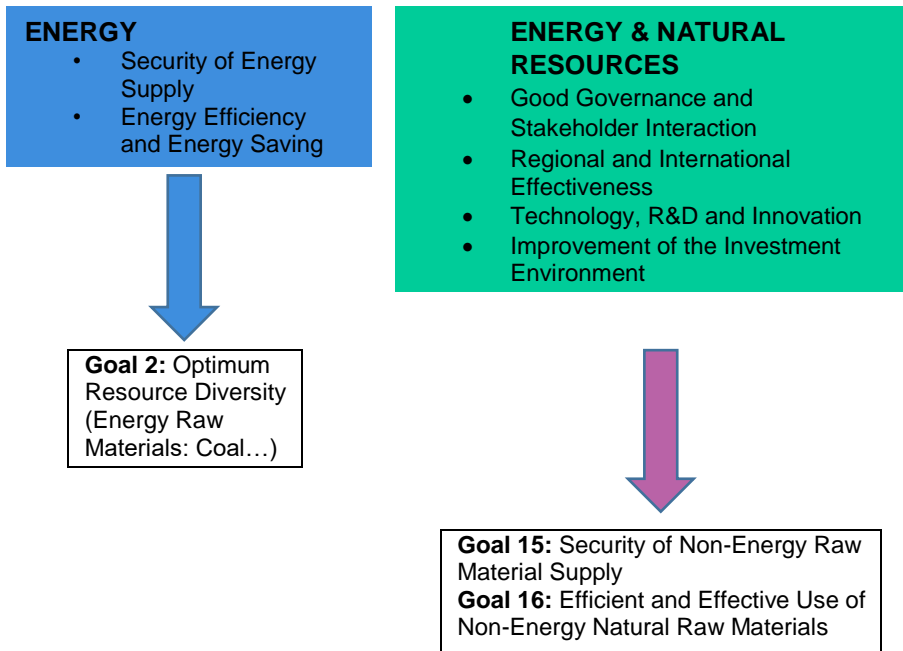
- The Ministry of Land and Resources of the People's Republic of China has developed draft bridging documents to align its national mineral and petroleum systems to UNFC.
- The African Mineral Development Centre (AMDC), supported by the African Union and hosted by the Economic Commission for Africa (ECA), has decided to adopt UNFC as the sustainable management tool for the whole of Africa as part of the realization of the Africa Mining Vision.

The Coordinating Committee for Geoscience Programs in **East and Southeast Asia** (CCOP) has decided to develop guidelines for adoption of UNFC as the unifying framework in 14 member countries.

### **Strategic Plan (2015-2019) – MENR**

**Utilizing natural resources of Turkey in line with sustainability principles**

### **SUSTAINABILITY**



**Basic values and principles** (*Transparency, reliability, environmentally consciousness and respect to life; participation, innovativeness & leadership, efficiency and consistency & predictability*)

## Mineral Industry in Turkey: Aiming for “Innovative Production, High and Stable Growth”

- Turkey has a diverse mineral industry that produces more than 50 mineral commodities from about 4,500 known mineral deposits, including metals and industrial minerals.
- Turkey is 10th in the world in terms of mineral variety and 28th for its production of underground resources.
- **Major minerals:** Coal, boron, chromium, copper, iron, gold, marble, bentonite, feldspar, trona
  - Turkey owns 72% of the World's boron reserves; 23% of the World's feldspar reserves; 20% of bentonite reserves
- **Size and scale of mining today**
  - Number of mining companies (2016): 14,084 (State: 86; Private: 13998)
  - Number of mineral licenses (23.08.2017): 16,822 (exploration: 5263; operating licenses: 11,559)

(As of yearend 2015, there were 6,090 mineral licenses in effect in Turkey)

- **Energy Raw Minerals Production** (Coal including asphaltite (2015): 61,5 Mt
- **Non-Energy Raw Minerals Productions** (2015):
  - Natural Stone: 27.2 Mt
  - Metallic Minerals: 22.2 Mt
  - Industrial Raw Minerals: 99.2 Mt

Cement & Construction Raw Minerals: 526.9 Mt



## Strategic Plan (2015-2019) - MENR: - The Most Linked Goals for National Resource Management

### Goal 2: Optimum Resource Diversity (Energy Security)

- increase in utilisation of domestic resources (coal & renewables) in electricity generation (60 billion kWh/year by the end of the plan period)
- increase the exploration activities
- accelerating investments
- decrease in imported natural gas share in electricity,

### Goal 15: Security of Non-Energy Raw Material Supply

- increase the exploration activities
- environmental issues
- health and safety
- licenses should be avoided to be kept by the investors in idle manner
- exploration and operation abroad
- corporate capacity in the field of mining
- critical raw materials
- common database relating to exploration activities.

### Goal 16: Efficient and Effective Use of Non-Energy Natural Raw Materials

- value addition
- intensive recycling from secondary products (waste items)
- by-product and end product inventory and utilization
- capacity and international standards

## Strategic Plan (2015-2019) –MENR- Energy Security – Goal 2 Utilizing natural resources of Turkey in line with sustainability principles

- High demand growth in energy and electricity
- High dependency on foreign energy: %76 (2015)
- High dependency on technology

Focus to increase production and use of domestic resources

- To increase coal exploration studies
- To accelerate installing domestic lignite-based power plants by using clean coal technologies
- To improve investment incentives for coal-based power plants

## **Electricity Market and Security of Supply STRATEGY PAPER (2009)**

- Priority to use domestic energy resources for electricity generation.
- “All existing domestic coal reserves should have been used for electricity generation purpose by the year 2023”.
- The share of nuclear power plants in electricity generation will be targeted to reach minimum 5 percent until 2020
- Renewable energy resources have a share of minimum 30 percent in electricity generation by the year 2023.
- As a result of the measures to be taken for the use of indigenous and renewable energy resources, the share of natural gas in our electricity generation will be targeted to be reduced to less than 30 percent.

## **Strategic Plan –MENR- Secure, Efficient and Effective Use of Energy and Non-Energy Raw Minerals – Goal 2, 15 & 16**

### **-What more is required?**

- More reliable resource estimates and management of national resources with adherence to an international classification & management standard,
- Data comparability and consistency
- for secure, sustainable supplies of energy and minerals by proactively develop our domestic resources, most efficiently, satisfying social and environmental concerns
- In line with Strategic Plan (MENR) basic values and principles (transparency, reliability, environmentally consciousness and respect to life; participation, innovativeness & leadership, efficiency and consistency & predictability)

## **UNFC and Resource Management in Turkey - features of UNFC to meet Turkey's requirement**

- The United Nations Framework Classification for Resources (**UNFC**) **provides a single framework to build global energy and mineral studies, analyze government policies, plan industrial processes and allocate capital efficiently.**
- **UNFC, as a tool for national resource management**, will result in better maintenance of national inventories, aid internal company resource management, reduce risks and create opportunities at financial market levels. (**full resource base & resource progression ability**)
  - By-product and end product inventory and utilization
- With due considerations for social and environmental aspects incorporated, **UNFC has become the only global standard that can provide a platform for the multifaceted development of all energy and raw material resources.**
- **UNFC is a universal tool for consistent and coherent classification and efficient management of all extractive and energy activities.** It applies to solid minerals, petroleum, uranium and thorium, geothermal energy and for injection projects for geological storage of CO<sub>2</sub>.

**(UNFC - applying a common vision and practice horizontally to all minerals and petroleum and vertically through all stages of the life cycle)**

- Significant progress has been made to broaden **UNFC's application to other renewable energy** systems, including bio-energy and solar, hydro and wind energy.

#### **UNFC and Resource Management in Turkey - Turkey's involvement in UNFC development and EGRC**

##### **• Development and Application of First Version UNFC(1997) –Solid Fuels and Mineral Commodities**

- Testing of First Version for TKI owned lignite deposits (1998-2002)
- Participation of Turkey in UNECE- AdHoc Group of Experts on Harmonization of Energy Reserves/ Resources Terminologies, 2001
- Organizing joint UNECE-Turkey Seminar at MTA,Turkey, 2002
- Preparing Case Study: Yatağan - Eskişehir Mining Area,TKI, Turkey (2003)
- Participation of Turkey to Extended Bureau of AdHoc Group of the Experts as Leader of Solid Minerals (2003-2012)

##### **• Development and Application of UNFC (2004)- Coal, Uranium and Other Minerals**

- Participation of Turkey in development studies of UNFC (2004)
- Updating Case Study reflecting changes from The First Version to UNFC (2004) Version

#### **UNFC and Resource Management in Turkey - Turkey's involvement in UNFC development and EGRC**

##### **• Mapping of UNFC to the other Systems for Mineral- CRIRSCO Template for Petroleum-PRMS**

- Co-Leading of Mapping study, (2007-2008)

##### **• UNFC(2009) for Fossil Energy and Mineral Reserves and Resources**

- Participation of Turkey in development studies of UNFC(2009) as Revising UNFC Task Force member
- Organizing joint UNECE-Turkey Workshop in Ankara, 2011 by UNECE, MENR-MIGEM, TKI & MTA.
- Participation of Turkey in Bureau of Group of the Experts as Vice Chairman, 2012
- Participation of Turkey in Preparation of TOR of Technical Advisory Group as a Task Force Member
- Translating UNFC(2009) Document into Turkish

## UNFC- 2009- 3 Dimensional

### Economic & Commercial Viability

E1: Confirmed to be economic  
E2: Expected to become economic  
E3: Not expected to become economic or too early stage to determine economic viability

### Field Project Status & Feasibility

F1: Feasibility confirmed  
F2: Feasibility under evaluation  
F3: Feasibility not known  
F4: No project identified

### Geological Knowledge

G1: High confidence  
G2: Moderate confidence  
G3: Low confidence  
G4: Potential accumulation

## Resource progression - The missing element

- The pathway all the way through production
- Consider the full life-cycle from the start
- Who, why, when, where, what and how?

## UNFC- 2009- 2 Dimensional (Resource Progression) Classes and Sub-classes defined by Sub-categories<sup>a</sup>

UNFC Classes Defined by Categories and Sub-categories					
Total Commodity Initially in Place	Extracted	Sales Production			
		Non-sales Production			
	Known Deposit	Class	Sub-class	Categories	
				E	F G
		Commercial	On	1	1,1 1, 2, 3
		Projects	Production		
			Approved	1	1,2 1, 2, 3
			for Development		
			Justified	1	1,3 1, 2, 3
			for Development		
		Potentially	Development	2 <sup>b</sup>	2,1 1, 2, 3
		Commercial	Pending		
		Projects	Development	2	2,2 1, 2, 3
			On Hold		
		Non-Commercial	Development	3,2	2,2 1, 2, 3
		Projects	Unclassified		
	Potential Deposit		Development	3,3	2,3 1, 2, 3
			Not Viable		
		Additional Quantities in Place		3,3 4	1, 2, 3
	Exploration Projects	[No sub-classes defined] <sup>c</sup>		3,2 3	4
		Additional Quantities in Place		3,3 4	4

- Better tracking of Mining licenses & projects (Goal 15)
- better production planning
- Better capacity projections
- Better dealing with obstacles, risks, including social and environmental issues
- by-product and end product inventory and utilization [UNFC full resource base accounting]
- Tool for common database development (Goal 15)
- More consistent data

### **Mineral Management in Turkey Comprehensive system for sustainable development**

- Sustainability at the core - SDGs, alignment to Turkey's vision and 10th. Development Plan, Strategic Plan of MENR. (SD included first in 1996 in 7th NDP in Turkey)
- Based on UNFC and tailored for Turkey's use
- Applicable horizontally to all mineral resources and vertically to the entire mining life-cycle
- Additional guidance on Turkey specific issues to integrate innovation and improve efficiency and productivity
- Potential to extent for the renewables, petroleum, nuclear, anthropogenic resources to reach all related goals of strategic plan for integrated management of all energy and raw mineral resources.
- Resource progression assurance:
- No mineral project will remain with the same status for long

## **2) CRIRSCO - COMMITTEE FOR MINERAL RESERVES INTERNATIONAL REPORTING STANDARDS - Introduction to CRIRSCO**

### **Harry Parker (CRIRSCO Past Chairperson)**

#### **What is CRIRSCO?**

- CRIRSCO is the Committee for Mineral Reserves International Reporting Standards
- The Mineral Definitions Working group was established in 1994 as part of the 15th Council of Mining and Metallurgical Institutions (CMMI). The objective was and still is the creation and promulgation of common standards for the public reporting of Exploration Results, Mineral Resources and Mineral Reserves
- CMMI was disbanded in 2002 but work continued under the name of CRIRSCO

- In 2007 the International Council of Mining and Metals became a strategic partner
- CRIRSCO is the Committee for Mineral Reserves International Reporting Standards
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### **Why CRIRSCO?**

- On the next few slides, the international character of the mining industry is shown
  - Leading producers for commodities
  - Multinational mining companies
  - Global financing
- There is a need for a common set of standards for public reporting
  - Copper
  - Iron Ore
  - Uranium
  - Nickel
  - Gold
  - Coal

### **Mining Companies**

- Most of the large mining companies operate world-wide

### **Financial Centers and Examples**

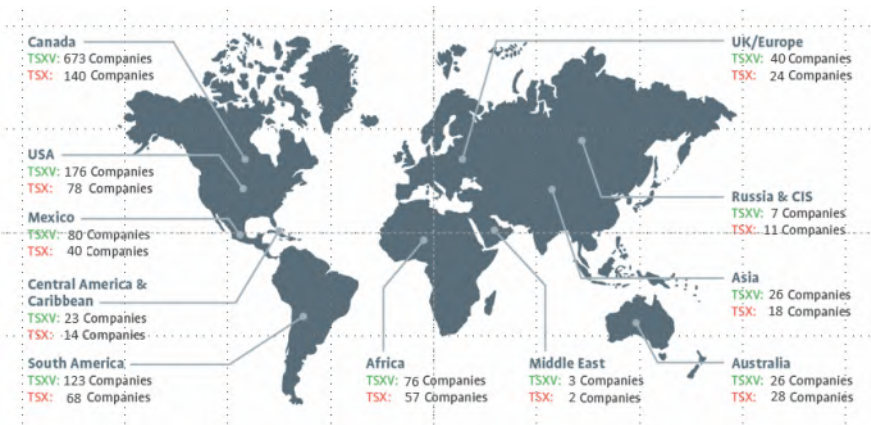
- NYSE and LSE lead in terms of market capitalization
- TSX/TSXV and ASX lead in terms of new listings and financings
- Hong Kong is a player in Asia for secondary listings:



- KAZ Minerals
- Vale
- Glencore
- South Gobi Energy Resources

	Canada	United Kingdom	Australia	South Africa	Hong Kong	USA
	TSX+TSXV	LSE+AIM	ASX	JSE	HKEx	NYSE/NYSE Mkt
No. Mining Issuers Listed	1318	167	626	42	59	104
Market Capitalization US B\$	150	215	168	115	79	353
New Mining Listings	29	7	13	2	2	2
Equity Capital Raised US B\$	5.7	3.4	1.3	0.3	1.5	1.8
Number Financings	553	72	321	0	15	4
Source TSX, Full Year 2015						

### Example Global Reach of TSX and TSXV (2015)



### Required Public Disclosure of Mineral Resources and Mineral Reserves

- Applications for exploration and mining licenses
- Initial public offerings
- Annual reports

### There Is a Need for a Common Set of Standards

- Accurate and efficient reporting
- Reports that emphasize materiality and transparency
- Reports prepared and signed by Competent (sometimes called Qualified) Persons
  - University degree in geoscience, mining engineering or metallurgy

- Member of a self-regulating professional society with the power to discipline/expel a member
- Minimum five years' relevant experience in style of mineralization or deposit type or activity being reported

### **CRIRSCO Consists of Representatives of National Reporting Organizations (NROs)**



Australia, Brazil, Canada, Chile, European Union, Kazakhstan, Mongolia, Russia, South Africa, USA

CRIRSCO has a strategic alliance with and is in part funded by the International Council for Mining and Metals; other support comes from mining companies and professional societies

In USA, SEC Requires IG7,

Under Update

## **INTERNATIONAL REPORTING TEMPLATE**

for the public reporting of

**EXPLORATION RESULTS, MINERAL  
RESOURCES AND MINERAL RESERVES**

## Common Definitions Contained in the Template

### Also Included:

- Public Report
- Competent Person
- Exploration Target
- Scoping Study
- Pre-feasibility Study
- Feasibility Study

## Example Resource Statement

From Twin Metals Minnesota Project, Ely Minnesota USA 2015 Technical Report

Deposit	Category	Tons (Mst)	CuEq (%)	Cu (%)	Ni (%)	Pt (ppm)	Pd (ppm)	Au (ppm)	Ag (ppm)
Maturi	Measured	308	1.02	0.63	0.20	0.146	0.339	0.083	2.26
	Indicated	822	0.96	0.58	0.19	0.155	0.350	0.083	2.10
	Inferred	531	0.81	0.49	0.16	0.138	0.314	0.070	1.81
Maturi Southwest	Indicated	103	0.77	0.48	0.17	0.080	0.185	0.048	1.58
	Inferred	32	0.70	0.43	0.15	0.065	0.157	0.041	1.43
Subtotal Maturi and Maturi Southwest	Measured	308	1.02	0.63	0.20	0.146	0.339	0.083	2.26
	Indicated	924	0.94	0.57	0.18	0.147	0.332	0.079	2.04
	Measured + Indicated	1,233	0.96	0.58	0.19	0.147	0.334	0.080	2.10
	Inferred	563	0.81	0.49	0.16	0.134	0.305	0.068	1.79
	Indicated	100	1.02	0.52	0.16	0.235	0.515	0.115	—
Birch Lake	Inferred	239	0.88	0.46	0.15	0.180	0.370	0.087	—
Spruce Road	Inferred	480	0.66	0.43	0.16	—	—	—	—

In most jurisdictions Measured and Indicated can be added, but Inferred must

### Notes to Accompany Mineral Resource Table:

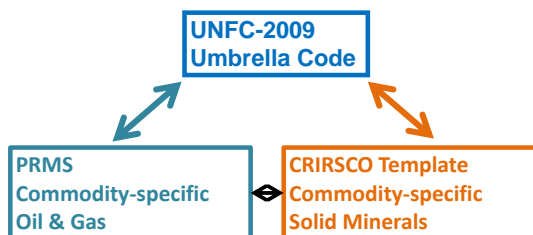
1. The Mineral Resource estimates have different effective dates as follows: Maturi: 4 February 2014; Maturi Southwest: 15 June 2013; Birch Lake: 15 September 2012; Spruce Road: 15 September 2012.
2. The Qualified Person for the estimates is Dr. Harry Parker, RM SME, AMEC Consulting Geologist and Geostatistician, who is a Professional Geologist licensed in Minnesota.
3. Mineral Resources are reported inclusive of Mineral Reserves and on a 100% basis. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources were estimated assuming underground bulk mining methods and are reported at an approximate cutoff grade of 0.3% Cu.

## Acceptance of National Reporting Codes and Standards by Capital Markets

- Australia: JORC, NI43-101/CIM, PERC, SAMREC
- Canada: NI43-101/CIM, Chilean Code, IG7, JORC, PERC, SAMREC, NAEN
- Chile: Chilean Code
- European Stock Exchanges: All CRIRSCO codes
- Hong Kong: JORC, NI43-101/CIM, PERC
- Johannesburg: SAMREC
- New York: IG7
- Singapore: NI43-101, JORC, PERC

Exceptions are granted on special application to listing authorities, particularly for secondary listings

## CRIRSCO and the United Nations Framework Classification (UNFC) Has Evolved from 1997 to 2009

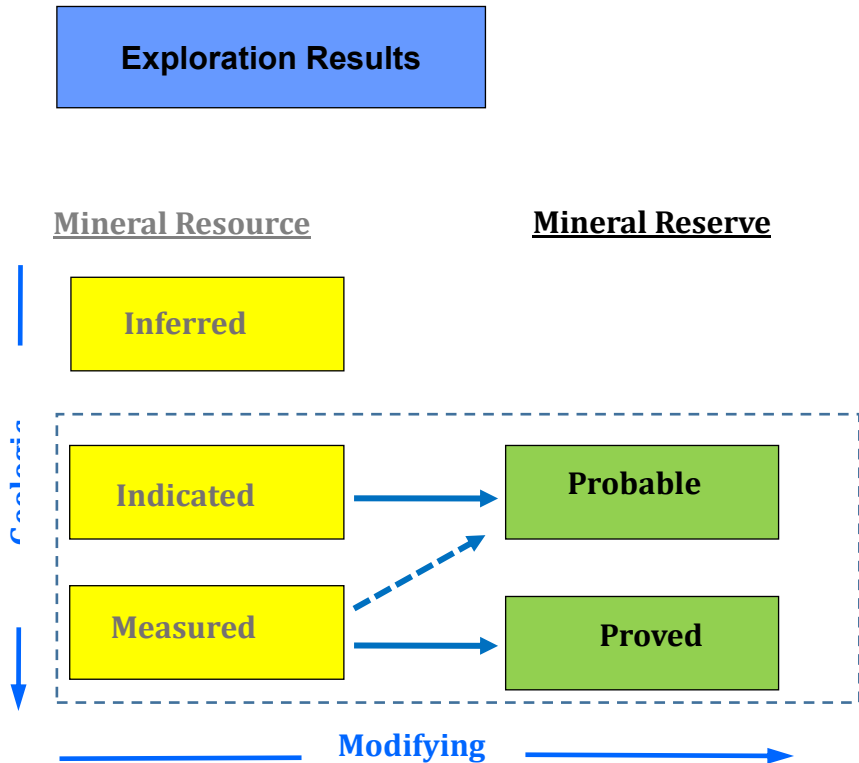


“In accordance with the existing agreements with CRIRSCO and SPE, they have provided the commodity-specific specifications for minerals and petroleum via the CRIRSCO Template and SPE-PRMS. Along with the Generic Specifications, these provide the foundation and keystones for consistent application of UNFC-2009. Other classification systems may be used with UNFC-2009 by mapping through the CRIRSCO Template/SPE-PRMS, or by mapping directly to UNFC-2009. In either case, the mapping must comply with all UNFC-2009 definitions and Generic Specifications to the satisfaction of the Expert Group on Resource Classification. Additionally, it must be demonstrated to the satisfaction of the Expert Group on Resource Classification that there is no material difference between estimates resulting from the application of the mapped classification system and the CRIRSCO Template/SPE-PRMS.”

### Key Features of CRIRSCO

- CRIRSCO promotes best practices for the **public reporting** of Mineral Exploration Results, Mineral Resources and Mineral Reserves. The CRIRSCO standards quantify, qualify and categorize mineral assets on the basis of the data, models and criteria
- **Objective:** Reliable mineral inventory to underpin mineral estimates used by mining companies to attract investment and promote exploration and development activity
- Public Reports are prepared by or under the supervision of a **Competent Person** (Qualified Person in Canada) who signs off and takes personal responsibility. International agreements to recognize professional organizations (RPO) located outside host country
- A clear distinction between resources and reserves
- **Excludes** “uneconomic” and “undiscovered” materials

## CRIRSCO - Classification Scheme



### Key Features of United Nations Framework Classification

- **Generic Classification Framework** for solid minerals and oil and gas.
- Important tool for **global** and governmental **communication**
- **Not a Public Reporting Standard** - no underlying principles as a reporting standard, no securities recognition.
- **No Certification of Competency** – does not include a Competent Person who takes **personal responsibility** for estimates.
- Includes **“Undiscovered”** & **“Uneconomic”** material

## United Nations Framework Classification

### Geological Axis

G1 - quantities associated with a known deposit that can be estimated with a high level of confidence;

G2 - moderate level of confidence;

G3 - low level of confidence;

G4 - Estimated quantities associated with a potential deposit, based primarily on indirect evidence

## CRIRSCO – UNFC Bridging Application of G-axis

CRIRSCO Template		UNFC-2009 “minimum” Categories			UNFC-2009 Class
Mineral Reserve	Proved	E1	F1	G1	Commercial Projects
	Probable			G2	
Mineral Resource	Measured	E2	F2	G1	Potentially Commercial Projects
	Indicated			G2	
	Inferred			G3	
Exploration Results		E3	F3	G4	Exploration Projects

## CRIRSCO – UNFC Bridging

### Detailed Mapping of E&F axis

#### CRIRSCO Activities

- Annual meetings are held with nearly the entire membership (2 persons per NRO) attending
- Meetings are held in countries that are interested in joining CRIRSCO or are joining CRIRSCO
  - 2013 Colombia
  - 2014 Mongolia
  - 2015 Brazil
  - 2016 India
  - 2017 Indonesia
- Workshops on public reporting are open to the public

- Other workshops and meetings are held as needed
  - 2014 Goa conference of International Seabed Authority
  - Annually - United Nations Expert Group on Mineral Resources
  - International Accounting Standards Board

### **National Reporting Organizations**

An NRO must meet the following criteria to be accepted for CRIRSCO Membership:

- Produce and be responsible for maintaining a reporting standard that is compatible with the Template\* and which is recognized as the standard for Public Reporting, or has the wide support of professional bodies, in the country/region.

\*Compatibility with the CRIRSCO Template means having a standard that is largely based on the Template with national variations as required by regulators, but with minimal variation on the core definitions contained in the Template. For purposes of government reporting, mapping to a previous Mineral Resource and Mineral Reserve classification is permitted, however “compatibility” is not achieved by linking a national reporting system to the Template by mapping alone.

- Agree to conduct international consultation with NROs represented on CRIRSCO before making amendments to its National or Regional reporting standard.
- Include credible, self-regulating, professional bodies that provide disciplinary systems and codes of ethics that govern the behavior of Competent Persons or equivalents as defined in the Template.
- Commit to engaging in CRIRSCO activities.

### **Typical Setup**

- Sponsoring bodies for NROs can be professional societies or industry “trade” groups
- The NRO maintains the reporting code and provides training programs
- The Recognized Professional Organizations (RPOs) vet applicants for Competent Person status to ensure potential Competent Persons have the relevant qualifications to act as a Competent Person
  - admissions
  - ensure continuing education, professional development
  - investigate ethics complaints and administer discipline; have the power to expel a member.

### **3) CRIRSCO - COMMITTEE FOR MINERAL RESERVES INTERNATIONAL REPORTING STANDARDS - An overview of the CRIRSCO International Reporting Template**

**Roger Dixon (CRIRSCO South Africa Representative)**

#### **Presentation Agenda:**

- Principle objective of CRIRSCO
- The International Reporting Template
  - Purpose
  - Principles
  - Standard Definitions
  - Competent Person
  - Fundamental Framework

#### **CRIRSCO - Principle Objective:**

To promote best practice in the international public reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves.

CRIRSCO is an international advisory body without legal authority, relying on its constituent members to ensure regulatory and disciplinary oversight at a national level.



It recognizes the truly global nature of the minerals industry and the agreed need for international consensus on reporting standards.

### **INTERNATIONAL REPORTING TEMPLATE for the public reporting of EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES November 2013**

#### **Purpose**

- Advisory only
- National Standards/Codes take precedence
- Model for development of new codes



## **Principles**

**Materiality:** All relevant information for a reasoned and balanced judgement by investor or advisors

**Transparency:** Sufficient information clear and unambiguous in order that the reader is not misled

**Competency:** Based on the work of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics

## **15 Standard Definitions**

- |                       |                      |                         |
|-----------------------|----------------------|-------------------------|
| • Public Reports      | • Mineral Resource   | • Probable Reserve      |
| • Competent Person    | • Inferred Resource  | • Proved Reserve        |
| • Modifying Factors   | • Indicated Resource | • Scoping Study         |
| • Exploration Target  | • Measured Resource  | • Pre-Feasibility Study |
| • Exploration Results | • Mineral Reserve    | • Feasibility study     |

## **Public Report**

- Reports prepared for investors or potential investors
- Annual Reports
- Quarterly Reports
- Information Memoranda
- Websites
- Public Presentations
- Stock Exchange Information Systems

## **Competent Person**

- Is a minerals industry professional who is a member of a Recognized Professional Organization (RPO) with enforceable disciplinary processes including the powers to suspend or expel a member
- Minimum Five (5) years relevant experience in the style of mineralization or type of deposit under consideration and in the activity which that person is undertaking.

## **Team approach allowed - leader signs off.**

Satisfied in own mind able to face peers and demonstrate competence in the commodity, type of deposit and situation.

Lead CP to be satisfied with the work of others

## **Disciplinary Procedure**

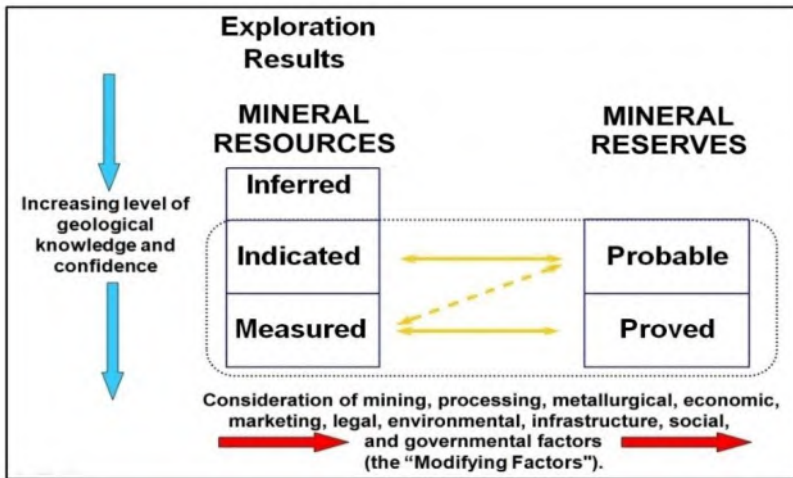
SAMREC – JORC: Responsibility of National Reporting Organization (NRO)

SAIMM – AusIMM: International reciprocity agreements through Recognized Professional Organizations (RPO)

## Recognised Professional Organisations (RPOs)

Australasian Institute of Mining and Metallurgy	AusIMM
Australian Institute of Geoscientists	AIG
Canadian Council of Professional Geoscientists	CCPG
European Federation of Geologists	EFG
The Geological Society	GS
Institute of Geologists of Ireland	IGI
Institute of Materials Minerals and Mining	IMMM
Mining and Metallurgical Society of America	MMSA
Society for Mining Metallurgy and Exploration	SME

## Fundamental Framework



## Modifying Factors

- Mining
- Processing
- Metallurgical
- Economic
- Marketing
- Legal
- Environmental
- Social
- Infrastructure
- Governmental

## **Mineral Resource**

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

## **Mineral Reserve**

A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource.

It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors.

Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

## **Mineral Resources / Reserves**

- Must be clearly stated Mineral Resources are ***inclusive or exclusive*** of Mineral Reserves
- Two should never be added together
- If inclusive relevant details of unmodified resources should be reported

## **4) CRIRSCO - COMMITTEE FOR MINERAL RESERVES INTERNATIONAL REPORTING STANDARDS - Code of Ethics and Disciplinary Action**

**Harry Parker (CRIRSCO Past Chairperson)**

### **SME Code of Ethics**

- The first responsibility and the highest duty of members shall at all times be the welfare, health and safety of the community

- Members shall act so as to uphold and enhance the honor, integrity and dignity of the profession
- Members shall perform work only in their areas of competence
- Members shall build their professional reputation on merit and shall not compete unfairly
- Members shall apply their skill and knowledge in the interests of their employer or client for whom they shall act, in professional matters, as faithful agents or trustees
- Members shall give evidence, express opinions or make statements in an objective and truthful manner and on the basis of adequate knowledge
- Members shall continue their professional development throughout their careers and shall actively assist and encourage those under their direction to advance their knowledge and experience
- Members shall comply with all laws and government regulations relating to the mineral industries and with the rules, regulations and practices as established and promulgated by the U.S. Securities and Exchange Commission and other comparable regulatory authorities in other jurisdictions with respect to the official listing requirements for mining and other companies

### **Interpretation**

- The first responsibility and the highest duty of members shall at all times be the welfare, health and safety of the community
- It follows that a member:
  - shall avoid assignments that may create a conflict between the interests of the member's client or employer and the public interest;
  - shall work in conformity with acceptable technological standards and not in a manner that jeopardizes public welfare, health or safety;
  - shall endeavor at all times to maintain technological services essential to public welfare;
  - shall in the course of the member's professional life endeavor to promote the well-being of the community and, if the member's judgment is overruled in a particular instance, inform the client or employer of the possible consequences (and, if appropriate under the circumstances, notify the proper authority of the situation);
  - shall contribute to public discussion on scientific and technological matters in the member's area of competence, if the member believes that it would constructively advance the well-being of the community.
- Members shall act so as to uphold and enhance the honor, integrity and dignity of the profession
- It follows that a member:
  - shall not be involved with any business or professional practice which the member knows or should know, based on the facts and

circumstances known to the member, to be of fraudulent or dishonest nature;

- shall not use association with other persons or entities to conceal unethical acts;
- shall not continue in partnership with, nor act in professional matters with any person who has been removed from membership as a Registered Member of SME because of unprofessional conduct

- Members shall perform work only in their areas of competence

- A member:

- shall inform the member's employer or client and make appropriate recommendations on obtaining further advice, if an assignment requires qualifications and experience outside the member's field of competence; and
- who is engaged in the practice of consulting shall not act as a consultant nor offer to so act unless the member

- (i) occupies a position of professional independence,

- (ii) is prepared to design and supervise works or act as an unbiased and independent adviser and

- (iii) otherwise conducts the member's practice in compliance with the conditions approved by SME, including this Code of Ethics and other SME Guidelines

- Members shall build their professional reputation on merit and shall not compete unfairly.

- A member:

- shall only approach prospective clients or employers with due regard to the member's professional independence and to this Code of Ethics;
- shall neither pay nor offer, directly or indirectly, financial or other inappropriate inducements to third parties in order to secure work from clients;
- shall advise clients to choose consultants on the basis of merit.
- shall neither falsify nor misrepresent, by misleading omissions or otherwise, the qualifications, experience and prior responsibility of the member or the member's associates;
- shall not do anything, maliciously or carelessly, to injure, directly or indirectly, the reputation, prospects or business of others;

- Members shall build their professional reputation on merit and shall not compete unfairly (Continuation)

- A member:

- shall not use the advantages of a privileged position to compete unfairly with others;

- shall exercise due restraint in explaining the member's own work and shall refrain from unfair criticism of the work of another;
  - shall give proper credit for professional work to those to whom credit is due and acknowledge the contribution of subordinates and others;
  - may use advertising (which term should be broadly construed to include solicitation of prospective clients by any means) to announce the member's practice and availability, but such advertisements may not include any false or defamatory statements
- Members shall apply their skill and knowledge in the interests of their employer or client for whom they shall act, in professional matters, as faithful agents or trustees.
  - A member:
    - shall at all times avoid all known or potential conflicts of interest. The member should keep the employer or client fully informed on all matters, including financial interests, which could lead to such a conflict. In no circumstances should the member participate in any decision which could involve the member in conflict of interest;
    - shall, when acting as administrator of a contract, be impartial as between the parties in the interpretation of the contract. This requirement of impartiality shall not diminish the member's duty to apply the member's skill and knowledge in the interests of the employer or client;
    - shall not accept compensation, financial or otherwise, from more than one party for services on the same project, unless the circumstances are fully disclosed and agreed to by all interested parties;
    - shall neither solicit nor accept financial or other valuable consideration, including but not limited to free designs, from material or equipment suppliers in exchange for specifying the suppliers' products;
  - Members shall apply their skill and knowledge in the interests of their employer or client for whom they shall act, in professional matters, as faithful agents or trustees. (Continuation)
  - A member:
    - shall neither solicit nor accept gratuities, directly or indirectly, from contractors, their agents, or other parties dealing with the member's client or employer in connection with work for which the member is responsible;
    - shall advise the member's client or employer whenever the member believes, based on the member's studies, that a project proposed by the client or employer may not be viable;

- shall neither disclose nor use confidential information gained in the course of the member's engagement or employment without express permission of the client or employer except as may be required by court order or other legal process
- Members shall give evidence, express opinions or make statements in an objective and truthful manner and on the basis of adequate knowledge.
- A member:
  - (i) shall be objective and accurate in the member's professional reports, statements or testimony before any tribunal and (ii) shall express an opinion only on the basis of adequate knowledge and technical competence in the area
  - shall reveal the existence of any interest, pecuniary or otherwise, that could be taken to affect the member's judgment in a technical matter about which the member is making a statement or giving evidence.
- Members shall continue their professional development throughout their careers and shall actively assist and encourage those under their direction to advance their knowledge and experience
- A member:
  - shall encourage the member's professional employees, associates and subordinates to further their education and
  - shall take a positive interest in and encourage the member's professional employees, associates and subordinates actively to support, the SME and other professional organizations which further the general interests of the profession
- Members shall comply with all laws and government regulations relating to the mineral industries and with the rules, regulations and practices as established and promulgated by the U.S. Securities and Exchange Commission and other comparable regulatory authorities in other jurisdictions with respect to the official listing requirements for mining and other companies.
- A member:
  - shall make reasonable efforts to be informed of the laws and regulations relating to the mineral industries in the United States and other countries where the member may be engaged as an employee or consultant;
  - shall observe the requirements of stock exchanges and other self-regulatory organizations with respect to the content preparation and uses of reports on mineral exploration, mineral resources and mineral reserves and other assessments issued by companies listed by or affiliated with exchanges or self-regulatory organizations

## **SME Disciplinary Procedure**

- Complaint is referred to Ethics Committee
- Ethics Committee conducts an investigation
- Member is informed of complaint and hearing is scheduled
- Hearing takes place
- Ethics Committee determines whether Ethics Code has been violated by clear and convincing evidence; if not there is no further action
- If there is clear and convincing evidence Ethics Committee may:
  - Warn or reprimand the member
  - Suspend membership for period of not more than 12 months
  - Expel the member
- Findings by courts, government agencies, stock exchanges constitute clear and convincing evidence, but member can seek to rebut the finding
- Suspensions or Expulsions must be approved by SME Executive Committee
- Member may appeal a decision of the Ethics Committee to the Executive Committee
- Ethics Committee and Executive Committee may publish findings
- Executive Committee shall respond to court orders, requests for information from government agencies, stock exchanges

## **Disciplinary Procedures- Comments**

- Ethics complaints are rare
- Ethics Committee seeks legal advice to ensure member is afforded due process. This can lengthen the time to conduct an investigation, particularly if investigation involves solicitation of information from overseas.
- Members sometimes do not cooperate with investigations
- High profile cases may involve securities regulators as well as Recognized Professional Organizations
- A Recognized Professional Organization's tardy response time may be considered grounds for denial of reciprocity by other RPOs

## **Ethical Issues for the Qualified Person**

- Following slides come from a course presented by Greg Gosson in British Columbia
- APEGBC is the Association of Professional Engineers and Geoscientists in British Columbia

## **Qualified Person – Relevant Experience Self-Assessment**

- To be considered a Qualified Person, you must have relevant experience on the subject matter you are providing an opinion



- How much and what kind of experience is necessary to be considered qualified?
- What are the boundaries?
- Are you being asked to take responsibility for information that is outside of your area of expertise?

### **NI 43-101 Requires Involvement of a Qualified Person in Preparing Scientific and Technical Disclosure**

#### **Section 2.1 of NI 43-101**

- All disclosure of scientific and technical information on a material mineral property must be:
- Prepared by or under the supervision of a Qualified Person
- Approved by a Qualified Person

#### **Ethical Issue**

- How involved should you be to take responsibility for “supervising the preparation of information” by others?

### **NI 43-101 Requires Naming of the Qualified Person**

#### **Section 3.1 of NI 43-101**

- All written disclosure of scientific and technical information on a material mineral property must:
  - Name the Qualified Person that prepared/supervised preparation of information
  - State the relationship of QP to the issuer

#### **Ethical Issue**

- If you are named in the news release, then you should agree with the all of the contents of the news release
  - Context is as important as content.
  - Do you agree with how the information you prepared is being used by the company?
- Securities law puts reliance on Qualified Person to help ensure integrity of the securities market
- NI 43-101 does not work without commitment by Qualified Person
- Application to the APEGBC Professional Code of Ethics to this issue is contained in following slides

### **APEGBC Code of Ethics**

#### ***Hold paramount the safety, health and welfare of the public.***

- Securities commissions' mandate is to protect public interest by regulating trading in securities.
- Securities law requires professional involvement in preparing a mining company's disclosure

- Professional members involved with mineral projects have an obligation to apply their professional and ethical standards to information prepared for public disclosure

***Undertake and accept responsibility for professional assignments only when qualified by training or experience.***

- Qualified Person must have experience relevant to the subject matter of the mineral project and the technical report
- Know the limits of your qualifications and when to ask for assistance
- Exercise caution when signing off on work outside of your discipline

***Provide an opinion on a professional subject only when it is founded upon adequate knowledge and honest conviction.***

- Ethical challenges when providing opinion on mineral projects:
- Relying on work of others – what level of verification is necessary?
- Having a basis for your assumptions – not arbitrary, or unsupported assumptions
- Do you agree with how your opinion is used by the company?

***Present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded.***

- Be familiar with the industry practices, disclosure standards and professional responsibilities under securities law
- It may help if you can point out that your position on proper scientific or technical disclosure is supported by securities law

***Report to their association or other appropriate agencies any hazardous, illegal or unethical professional decisions or practices by engineers, geoscientists, or others.***

- Geoscientists and engineers are the first line of defense when it comes to ensuring the integrity of the capital markets when it involves exploration and mining companies.

## Example Ethics Case No. 1

**WHEREAS** on June 10, 2014, a Notice of Inquiry was issued to Richard G.R. Munroe, P.Geo. ("Mr. Munroe"), that contained the following allegation:

**AND TAKE NOTICE** that the allegation against you is that contrary to the *Act*, you have demonstrated unprofessional conduct in your report for Rio Plata Exploration Corporation dated April 9, 2013 entitled "Technical Brief on the Metates Mine Property, Municipality of Mazatlan, Sinaloa, Mexico" ("Technical Report") and your "Consent of Qualified Person" dated April 11, 2013 regarding the Technical Report, by reason of one or more of the following deficiencies in the Technical Report:

1. it does not adequately support the resource estimate in the core area of the Metates Mine property;
2. it extrapolates the resource estimate over long distances without disclosing local sampling and assay support and designates the additional quantities as inferred resources;
3. it contains resource estimates that are unsupported, contrary to National Instrument (NI) 43-101;
4. it does not provide adequate explanation of quality control measures employed before samples were sent to laboratories;
5. it does not explain why chip samples were suitable for inclusion in the database used to estimate a mineral resource;
6. it does not discuss the nature, extent and results of quality control procedures employed and quality assurance actions taken; and

**AND WHEREAS** Mr. Munroe admits the allegations in the Notice of Inquiry;

**AND WHEREAS** the Association of Professional Engineers and Geoscientists of the Province of British Columbia (the "Association") and Mr. Munroe wish to resolve this matter by consent in order to avoid the need for a disciplinary inquiry;

**THEREFORE** by consent, this Order is hereby made, pursuant to the Act, specifically s. 32.1:

- (a) Mr. Munroe is hereby reprimanded;
- (b) Mr. Munroe shall pay a fine in the amount of \$10,000 to the Association, payable to the Association within two years from the reference date of this Consent Order.
- (c) Mr. Munroe shall pay \$2,000 towards the Association's legal costs, including disbursements and taxes. Such costs will be payable within two years of the reference date of this Consent Order.
- (d) Mr. Munroe agrees to a condition imposed on his membership in the Association that he shall not perform ore resource or ore reserve estimations as defined in National Instrument 43-101. Despite this condition on his membership, Mr. Munroe is permitted to:
  - (i) partner with another professional geoscientist with expertise in ore resource or ore reserve estimations provided that the other professional geoscientist takes responsibility for the ore resource or ore reserve estimations in a National Instrument 43-101 report; and
  - (ii) prepare geological reports which do not involve ore resource or ore reserve estimations.

## **Example Ethics Case No. 2**

### **Findings of Alberta Securities Commission**

- 2.21 On May 13, 1996, Nash exercised options and purchased 50,000 Cartaway shares at a share price of \$0.72; he then sold all his Cartaway shares at an average price of \$9.15, for a profit of approximately \$420,280.
- 2.22 By selling his Cartaway shares on May 13, 1996, given his special relationship to Cartaway, with full access to the drill logs, information from the on-site geologist, inspection of drill core, etc., he traded on inside information, thereby contravening section 119(2) of the Act.

- 2.23 On May 16, 1996, the Respondent Ivany announced in a press release the visual results of the third hole drilled on the Cirque property. Included in the press release was a report of "heavy concentrations of sulphide mineralization (pyrrhotite, pentlandite and chalcopyrite)." Pentlandite is a significant nickel indicator.
- 2.24 No observations of pentlandite had been recorded by Sharpley in his drill logs, which drill logs were reviewed before preparation of the press release. Nash recalls asking Sharpley over the telephone whether or not he had seen pentlandite in the core and Sharpley advising that he had seen some. Sharpley's memory of the conversation is that he said he thought there was pentlandite there but could not be sure.
- 2.25 Also included in the press release was the information that the assay results of the first two holes would be released May 17, 1996.
- 2.26 On May 16, 1996, Cartaway stock traded in a range of \$14.90 to \$26.00 and closed at \$23.00 on a volume of 2,877,739 shares.
- 2.27 On May 17, 1996, Nash announced in a press release the assay results of the first two holes. The assay results showed far less chalcopyrite than the visual results.
- 2.28 The trading after the May 16 press release was so heavy that the ASE system crashed and remained inoperative until after the assay results had been announced. When trading resumed on May 21, 1996, Cartaway stock re-opened at \$2.76 per share.
- 2.29 By causing Cartaway to issue the May 16, 1996, press release containing a misrepresentation as to the presence of pentlandite, Nash, as a senior officer of Cartaway, acted in a manner contrary to the public interest.
- 2.30 As a result of the foregoing, Nash acted in a manner contrary to Act, the Rules and the public interest.

- 3.1.5 As a result of the trade referred to in paragraph 2.21 above, Nash made a profit of \$420,280;
- 3.16 Nash will testify at the hearing into allegations relating to any remaining Respondents; and,
- 3.17 On August 24, 1999, Nash declared personal bankruptcy.
- 3.2 Based on the agreed statement of facts and the factors agreed by Staff and Nash to be relevant to sanction, it is jointly recommended that:
- 3.2.1 Nash be cease traded and denied the use of all exemptions contained in the Act and the Rules for a period of eight (8) years from the date of any order;
- 3.2.2 Nash resign all positions that he holds as a director or officer of any issuer and be prohibited from becoming or acting as a director or officer of any issuer for a period of eight (8) years from the date of any order;
- 3.2.3 Nash pay an administrative penalty in the sum of \$25,000; and,
- 3.2.4 Nash pay the sum of \$25,000 to help defray Staff's costs of this investigation.

## **Conclusions**

- Ethic codes are designed to protect the public
- There are safeguards built into the system to protect the QP; he must consent where he is named in a press release or report
- Recognized Professional Organizations will come down hard on misconduct
- Securities authorities will come down even harder, particularly where fraud (intentional misconduct) is committed

## **5) CRIRSCO - COMMITTEE FOR MINERAL RESERVES INTERNATIONAL REPORTING STANDARDS - The relationship between the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) Template 2013 and the United Nations Framework Classification (UNFC for Resources)**

### **Roger DIXON (CRIRSCO South African Representative)**

#### **Presentation Agenda**

- Objective and purpose;
- UNFC for Resources;
- The Template;
- Bridging documents;

- Non-economic mineralization;
- NEA/IAEA Mapping

### **CRIRSCO - Principle Objective**

To promote best practice in the international public reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves.

CRIRSCO is an international advisory body without legal authority, relying on its constituent members to ensure regulatory and disciplinary oversight at a national level.

It recognizes the truly global nature of the minerals industry and the agreed need for international consensus on reporting standards.

### **UNFC for Resources**

- Generic classification system applicable to Fossil Energy and Mineral Reserves and Nuclear fuels;
- Provides a single framework on which to build international energy and mineral studies;
- Allows for non-economic mineralization
- Now applicable to renewable energy

Important tool for harmonized generic terminology at a level suitable for global communication

### **UNFC for Resources**

- Framework classification not a reporting standard
- No competency requirement
- No Securities Exchange recognition

### **UNFC for Resources**

Generic, Principle based

3 Axis

Economic and Social,

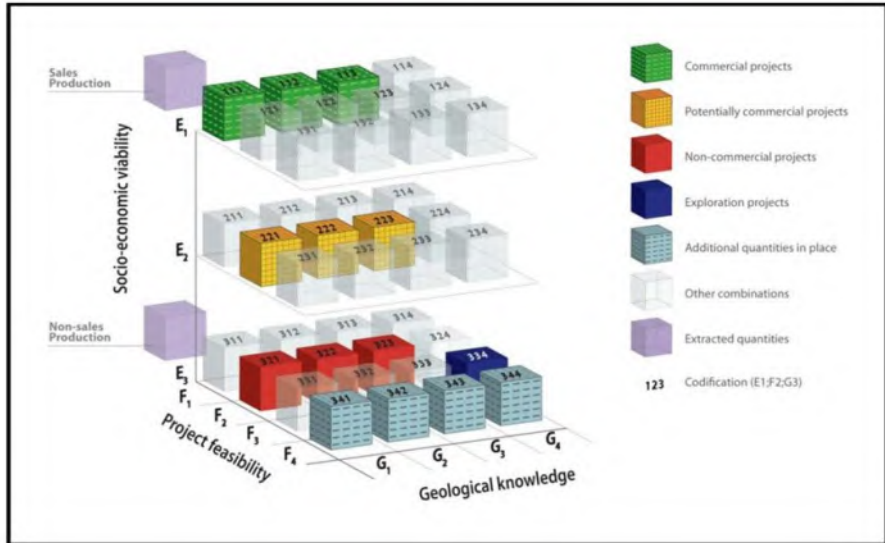
Feasibility,

Geological (G axis)

Numerical code

Applied directly or as harmonizing tool

## UNFC for Resources



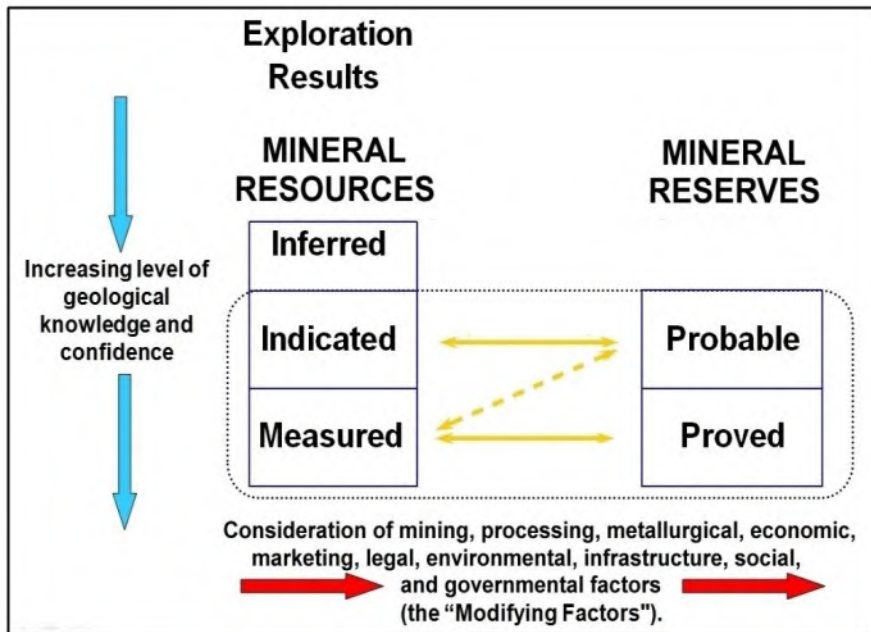
## CRIRSCO Engagement

- United Nations Economic Commission for Europe (UNECE) (1999)
- Society of Petroleum Engineers (SPE) (2004)
- International Accounting Standards Board (IASB)
- International Atomic Energy Agency (IAEA)
- Member of TAG and EGRC Bureau

## General Relationship between Exploration Results, Mineral Resources and Mineral Reserves



Figure 1 in the CRIRSCO Template



Re-Oriented Figure Showing the CRIRSCO Categories (Shaded) and Additional Categories in Other System

Comparison of the Petroleum Resource Management System (PRMS) and the CRIRSCO Template

UNFC – CRIRSCO TEMPLATE

CRIRSCO Template – UNFC

### Mineral Resource

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

## Non-economic Mineralization

- Strategic planning at country or global level
- Corporate mineral inventory management
  - exploration target definition
  - development options
  - purchase price accounting

## Classification of non-economic mineralization

- Mapped and bridged to CRIRSCO Template
- Mapped and bridged to UNFC for Resources

## Conclusion

- Need for management of inventory and resources
  - Company level
  - Country level
  - Global level
  - Definitions must be consistent

## 6) MONGOLIAN EXPERIENCE TOWARDS CRIRSCO MEMBERSHIP

### D. BAT – ERDENE (MPIGM)

#### REPUBLIC of MONGOLIA

Capital – Ulaanbaatar.

Area – 1 566 000 km<sup>2</sup> (18)

Population – 3.0 mln (137)

Density – 1.9 pers/km<sup>2</sup>, lowest in world

GDP – 11 bln.USD

Per capita – 3660 USD

#### Industry

- Mining – Cu, Au, Mo, Pb, Zn, coal, fluorite,
  - Agriculture – livestock breeding (nomadic style)
  - Tourism – in summer
- Officially “**Mongolian Geological Survey**” established in 1939 and since that time Mongolian and foreign geologists continuously studied geology and mineral resources of the country.



- The history of Mongolian geological study has several stages
  - **1900 – 1939** scientists from Russia, USA, Europe, USSR.
  - **1940 – 1965** mainly USSR geologists regional mapping, minerals exploration.
  - **1966 – 1992** USSR, Mongolian and former socialist countries (scientific study, systematic geological and airborne mapping, wide range deposit exploration)
  - **1993 – present** introduction of western technology, new methods of exploration, resource calculation, fundamental change of exploration philosophy.

### History of Mongolian resource classification

<b>1940</b>	From 1940s until 1998 Mongolia used USSR resource expertise. In 1983 Mongolian Government decided to use USSR's "Instruction on application of mineral resources classification".
<b>1993</b>	Comparative analyses of USSR, Canadian, Australian, USA resource classifications. Consultations with western experts such as Dr. A. Clark (USA), Dr. G. Verner (Germany)
<b>1998</b>	Approval and use of "Temporary mineral resources classification"
<b>2014</b>	Development of "Mineral resources and deposit reserves classification" according to CRIRSCO's requirements
<b>Sept. 2015</b>	Approval of modern "Mineral resources and deposit reserves classification".

### Why Mongolia changed mineral's recourse classification?

- **1990 - Transfer to market economy. Coordinate and tie up with social, political and economic changes in the country.**
- **1998 - Wide involvement of western exploration and mining companies. New methods of resource calculation, economic vs scientific approach. Misunderstanding and discrepancies between foreign and local geologists on resource and reserves.**

- **2010 - Importance of role of CP in relation to market, IPO, Confusions with international resource classification, reporting standards.**

#### **What NGOs have done**

- In 2006 Mongolian Society of Economic Geologists proposed to bring into Mongolia international exploration standards:
  - CP, QP institution, Code of Ethics, Responsibility
  - Modify Mongolian Mineral resource classification to international standards
  - Establish relationship with and become member of international geological, resource reporting organizations.
- Since 2008, special trainings for national geologists and engineers have been carried out at the Mongolian Technical University and **titles of Professional and Consultant** engineer have been issued by state.
- Annual **“Mongolian Exploration Round Up”** conference since 2010. Where the matter of QP/CP and international resource classification has been introduced and widely discussed among Mongolian geologists.

#### **Measures taken by the STATE**

- **Working Group established by Minister’s decree # 79 of 05 April 2010:**
- To carry out analysis of mineral deposits’ reserves and their international classification and look into the possibility of using it in Mongolia
- **Australian company “Snowden” selected:**
- World Bank provided financing to develop a National Classification and MRC code for reporting on Mongolian geological exploration results, mineral resources and their reserves in compliance with CRIRSCO model.

**MoU was signed on 28 Oct. 2011 (London)** between Mongolian Mineral Resource Committee and CRIRSCO

#### **SIGNING CEREMONY OF MOU BETWEEN MONGOLIAN MINERALS COMMITTEE AND CRIRSCO**

**London 2011.10.28**

#### **Cooperation between Mongolia and CRIRSCO**

**The Working Group established by Mining Minister’s decree # 71 of 06 Dec 2012**

- To carry out a **comparative study between the classification of Mongolian mineral resource reserves and international classification**, with subsequent conclusions and recommendations

**Working Group established by Mining Minister's decree # 182 of 10 Sep 2013**

- To develop, **in accordance with international standards, the procedures for mineral exploration and classification of hard rock mineral deposit reserves.**

**Working Group established by Mining Minister's decree # 196 of 26 Sep 2013:**

- Draft recommendations on **the charter, membership and ethic code of the Mongolian mineral reserves expert organization (NRO).**

**Seminar on “International Standards and Reporting of mineral deposits reserves”**

**Participants:** 35 professional geologists

from state and private organizations

**Speakers:** H. Parker (CRIRSCO)

B.Oyungerel (Snowden LTD)

I. Johns (Snowden LTD)

**Changes in the Mongolian policy and legislation**

**The State Minerals Policy (approved by MGL Parliament, May. 2014):**

- “Legal environment shall be created for exploration in the minerals sector and must be carried out by **a professional organization comprised of a team of certified engineers**”;
- “evaluation of mineral resources and mineral deposit's reserves shall be carried out **according to international standards**”

**Minerals Law (amendments July 01. 2014):**

- Art. 4.1.26 **“a professional, an analyst” is an individual who is nationally and internationally recognized and has rights bestowed upon by a geological or mining NGO**
- Art. 10.1.17 **“the responsible Ministry has right to ratify the guidelines for public reports on mineral resources, deposit reserves and**

exploration conducted in cooperation **with nationally and internationally recognized geological and mining NGOs”**

### **Mongolian Professional Institute of Geoscience and Mining**

- **In July 2014** Mongolian professional institute of geoscience and mining has been **established (MPIGM)**.
- In September 2014 **MOU was signed off** between Ministry of Mining & MPIGM. With aim to:
  - Take measures to train specialists with national and international recognition and certification
  - Jointly ratify the MRC Code for reporting on exploration results, mineral resources and deposit reserves based on CRIRSCO requirements.

### **• Signing ceremony of MOU between Ministry of Mining and MPIGM**

**State Secretary** – R. Jigjid

**President of MPIGM** – D. Damba

### **Annual CRIRSCO meeting**

**Mongolia, Ulaanbaatar, October 2014**

### **Signing ceremony CRIRSCO & MPIGM.**

**Mongolia is 8<sup>th</sup> member of CRIRSCO**

### **CRIRSCO ANNUAL MEETING MONGOLIA 2014**

CRIRSCO members visited one of the world largest Oyu Tolgoi copper-gold mine.

CRIRSCO members good bye dinner.

### **MILESTONES**

- **Dec. 2006** – Mongolian Society of Economic Geologists proposed to make principal changes in resource classification, OP/CP institution.
- **Oct. 2011** – **MoU between** Mongolian Resource Committee & CRIRSCO
- **2014** - Mongolian Parliament approved **Minerals Policy, amendments to the Minerals Law** of Mongolia.

- **2014 - Established** the Mongolian Professional Institute of Geoscience and Mining (**MPIGM**).
- **2014 – Mongolian Resource Reporting Code (MRC) approved by Minister of Mining**
- **Oct. 2014 - Mongolia became 8<sup>th</sup> member of CRIRSCO**
- **Sept. 2015 - Modern “Mineral resources and deposit reserves classification” approved by Minister of Mining.**

## **ROAD MAP**

**Mining minister designated MPIGM to issue CP Nov. 2015**

**Must be initiators** NGO, individuals, MSEG. **2006**

**Educating, convincing** geos, mining engineers to change

current situations (training, workshops, meetings, oversea trips) MSEG, Snowden, WB, CRIRSCO. **2007-2014**

**Work with state titles to get their support**, prove and convince them that certain legal reforms are required.

(strong participation of international organizations are critical) **2008-2014**

Make **amendments, changes to the main legal acts**. (State Minerals Policy, Minerals law)

Active participation of NGO is important.

**2013 - 2014**

**Establish responsible NGO** that fits international requirements (CRIRSCO) MPIGM. **2014**

**MPIGM is Member of CRIRSCO. 2014**

**WHY CRIRSCO???**

1. **ACCEPTS NATIONAL CODES, SPECIFICS.**
2. **FLEXIBLE.**
3. **DEMOCRATIC.**
4. **FRIENDLY TO NEWCOMERS.**
5. **BUSINESS ORIENTED, PRACTICAL (vs UN).**
6. **EASY TO UNDERSTAND.**
7. **WELL RECOGNIZED BY INTERNATIONAL STOCKS**

**CRIRSCO member countries**

#	Country	Area, km2	World Rank	Population	World Rank
1	<b>Australia</b>	7,692,024	<b>6</b>	23,130,931	<b>55</b>
2	<b>Canada</b>	9,984,640	<b>2</b>	35,675,834	<b>37</b>
3	<b>USA</b>	9,519,431	<b>4</b>	325,607,197	<b>3</b>
4	<b>SAR</b>	1,219,912	<b>24</b>	48,601,098	<b>26</b>
5	<b>EvroUnion</b>	4,324,782	<b>7</b>	508,191,100	<b>3</b>
6	<b>Russia</b>	17,125,407	<b>1</b>	146,267,288	<b>9</b>
7	<b>Chile</b>	756,950	<b>37</b>	17,216,945	<b>62</b>
8	<b>Mongolia (2014)</b>	1,564,116	<b>18</b>	3,000,000	<b>137</b>
9	<b>Brazil (2015)</b>	8,514,877	<b>5</b>	201,009,622	<b>5</b>
10	<b>Kazakhstan (2016)</b>	2,724,902	<b>9</b>	17,541,249	<b>64</b>
	<b>Total</b>	<b>63,427,041</b>		<b>1,326,241,264</b>	
	<b>Planet</b>	<b>Area, km<sup>2</sup></b>		<b>Population</b>	
	<b>Without Antarctica</b>	134,833,000		7,350,000,000	
	<b>CRIRSCO %</b>	<b>47.04</b>		<b>18.04</b>	



**CRIRSCO member countries + candidates**

#	Country	Area, km2	World Rank	Population	World Rank
1	Australia	7,692,024	6	23,130,931	55
2	Canada	9,984,640	2	35,675,834	37
3	USA	9,519,431	4	325,607,197	3
4	SAR	1,219,912	24	48,601,098	26
5	EvroUnion	4,324,782	7	508,191,100	3
6	Russia	17,125,407	1	146,267,288	9
7	Chile	756,950	37	17,216,945	62
8	Mongolia	1,564,116	18	3,000,000	137
9	Brazil	8,514,877	5	201,009,622	5
10	Kazakhstan	2,724,902	9	17,541,249	64
11	<i>China</i>	9,596,960	3	1,368,660,000	1
12	<i>India</i>	3,287,263	7	1,282,039,000	2
13	<i>Indonesia</i>	1,919,440	14	257,563,000	4
14	<i>Columbia</i>	1,141,748	25	48,400,400	28
15	<b>Turkey</b>	<b>783,562</b>	<b>36</b>	<b>79,464,000</b>	<b>18</b>
	<b>Total</b>	<b>80,156,014</b>		<b>4,362,367,664</b>	
	<b>Planet</b>	<b>Area, km2</b>		<b>Population</b>	
	<b>Without Antarctica</b>	134,833,000		7,350,000,000	
		<b>59,45</b>		<b>59,35</b>	

## 7) CBRR - Brazilian Experience

### Felipe Holzacker Alves – CBRR President)

#### Reality Pre CBRR

##### *R&R Reporting Confusion*

- Mining represents 5% of Brazilian GDP at ~US\$40-50 billion per year.
- No formal R&R reporting system:
  - Government law only incorporating Resources (measured, indicated, inferred);
  - BIG confusion on resources vs. reserves / no common measurement system.
- Listed / “professional” companies producing various reports for different stakeholders reporting requirements;
- Investor confusion, unreliable information for government, companies, consultants;
- Several efforts to implement CRIRSCO based R&R;
  - Always focused on law change / government dependency;
- Good base of Brazilians associated to other CRIRSCO family organizations.



#### CBRR

##### *Who We Are*

- National Reporting Organization & Recognized Professional Organization
- Established in 2014 by the 3 leading mineral sector associations (+90% Mining GDP):
  - Brazilian Association of Exploration Companies (ABPM);
  - Brazilian Agency for Mineral Technology Development;
  - Brazilian Mining Institute;
- Formally joined CRIRSCO in December 2015;
- CRIRSCO cornerstone documents:
  - Resources & Reserves Declaration Guide;
    - Technical Committee
  - Ethics Code;
    - Ethics Committee
  - Qualified Person registry, management & oversight.

- Registration Committee => 5 areas of expertise (10yrs exp/5yrs area exp/3yrs mgt)
- Alignment with stock exchange & government “non-opposition letter”.

## **Post CBRR**

### *Reality Today*

- Broad sector support as well as government & stock exchange;
- Government passed a new law in August implementing CRIRSCO “Figure 1” with proper resource & reserve establishment & reporting;
- Taskforce with stock exchange, National Development Bank and Development Ministry to promote mining companies listing;
  - Formal incorporation of CBRR R&R Guidelines as listing requirements.
- ~15 Registered Qualified Professional & additional 15-20 going through process;
- Reciprocities formalized with SME (USA) & Commission Minera (Chile);
  - Objective to expand until year end 2017.

## **Experience & Benefits**

### *Mineral Sector Leverage*

- People are key => small hands on group dedicated and committed to initiative;
  - Straight forward process (CRIRSCO).
- Opportunity to leverage sector providing higher level of corporate & technical governance:
  - Many opportunities were/are lost due to below standards technical information;
  - Higher possibility to attract capital and project development.
- Opens international mining markets for in country professional, unifying worldwide R&R standards and qualifications;
- Provides government with high quality information that can be used (solidly) for proper mineral & country policy making/decision.

## 8) CBRR Kazakhstan Experience - In introduction of the CRIRSCO standards

### GKZ system

The existing classification system and estimation methods for mineral reserves and resources – GKZ system- was incorporated by law in Republic of Kazakhstan in 2006. This system is based largely on those established by the Former Soviet Union.

The main role of GKZ is in ensuring that the interests of the state are upheld, exerting pressure against under-estimation of the mineral deposits.

To ensure that the estimation reports are correct, they are audited by GKZ appointed experts and approved by officials of the GKZ.



Before mining can start GKZ approve an official reserve which become part of the mining contract

### GKZ system

Increasing level of technical and economic knowledge	Exploration stages	Final documentation of stage completion	Resources/reserves, categories			Prognostic resources, categories		
	Deposit delineation (estimation) work	TEO of economic conditions. Kazakhstan Reserves estimation report	A, B	C <sub>1</sub>	C <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
			Fully explored deposit			Identified on flanks and deep levels of a deposit	Not considered at this stage	Not considered at this stage
			- balance (economic); - off-balance (potentially economic)	- balance (economic); - off-balance (potentially economic)	- balance (economic); - off-balance (potentially economic)			
	Prospecting work	GEO. Preliminary Feasibility Study (estimated conditions). Kazakhstan Reserves estimation report	Not considered at this stage	Estimated deposit  in some cases in areas of detailed study		- balance (economic); - off-balance (potentially economic)	Mineral Occurrence	Not considered at this stage
State geological studies (regional studies)	Subsoil geological study report	Not considered at this stage	Not considered at this stage	Not considered at this stage	Not considered at this stage	Mineralization fields, ore clusters, etc.		
Increasing level of geological knowledge and confidence of resources/reserves estimation								

## Development of KAZRC

<b>2012</b>	The Concept of Development of the geological industry until 2030. Introduction of international standards
<b>2014</b>	Start of the development of first draft of documentation: KAZRC, on Harmonization Guidelines, Code of Ethics and others. (Committee GSU, Kazgeology, SRK, etc)
<b>2014</b>	OECD project. Enhancing Competitiveness and Attracting FDI to the Mining Sector
<b>2015</b>	Plan of Nation of 100 steps/. 74th step. "Increasing transparency and predictability of Subsoil use sector of Kazakhstan through the introduction of international reporting standards on MINERAL RESERVES "CRIRSCO" and hydrocarbons.
<b>2015</b>	Task Force at Committee of Geology and Subsoil Use on development of international reporting standards (CRIRSCO)
<b>2015</b>	KAZRC Association and PONEN foundation.
<b>2015</b>	MOU MID-CRIRSCO
<b>2015</b>	Annual CRIRSCO Meeting in Brazil. Minutes.
<b>2015</b>	Application for CRIRSCO membership
<b>2015</b>	KASE Listing rules for subsoil use companies. Public reporting – CRIRSCO standards
<b>2016</b>	KARC Association become of CRIRSCO member.
<b>2017</b>	EBRD project “Kazakhstan: Development and Implementation of Subsoil Use Standards “
<b>2017</b>	Development of the MINING CODE



## **KAZRC Association was elected as 10-th member of CRIRSCO 14.06.2016**

### **Development of KAZRC Association**

The KAZRC Association was registered in 2015 as a self-regulatory non-profit organization based on voluntary membership of legal entities conducting their activities in mining sector of Kazakhstan.

**The Founders** of the KAZRC Association are:

- Association of Geological Exploration Enterprises of the Republic of Kazakhstan
- Association of Mining and Metallurgical Enterprises"
- "National Exploration Company Kazgeology".
- Last year 4 organizations joined and became members - PONEN, Micromine, Kazzinc and PetroKazakhstan.

### **Development of KAZRC Association**

**The main goals and objects of the KAZRC Association are:**

creation and actualization of the KAZRC Code in accordance with the International Reporting Template of CRIRSCO;  
representation of the Republic of Kazakhstan in the CRIRSCO Committee.

### **KAZRC Association:**

- Agree to conduct international consultation with NROs represented on CRIRSCO before making amendments to the KAZRC.
- Include credible, self-regulating, professional bodies that provide disciplinary systems and codes of ethics that govern the behavior of Competent Persons or equivalents as defined in the Template.
- Commit to engaging in CRIRSCO activities.

### **Development of PONEN**

PONEN is Kazakhstan Professional Association of Independent Experts in Subsoil Use and its main goal is to unify mining industry specialists for demonstration of their skills, representation, protection and promotion of their professional interests.

### ***The objectives of the PONEN:***

- Introduction of KAZRC reporting standards;
- Attracting highly knowledgeable specialists in geology and mining for independent expert review of geological materials and preparation of public reports;
- Provision of consultative, methodological and practical support in independent subsoil expert review;
- Protection of rights and interests of the PONEN members;

- Admission of new members who have reached relevant level of competence and practical experience;
- Compliance with the Code of Ethics for independent subsoil experts;

### **Development of PONEN**

1. THE CHARTER OF THE PUBLIC ASSOCIATION  
THE PROFESSIONAL ASSOCIATION OF INDEPENDENT EXPERTS IN  
SUBSOIL USE OF THE REPUBLIC OF KAZAKHSTAN.
2. CODE OF ETHICS
3. REGULATIONS FOR MEMBERSHIP
4. PROFESSIONAL DEVELOPMENT. GUIDELINE FOR REGISTERED  
PROFESSIONALS

### **Obtaining Support from Government**

In 2015, the **Listing Rules** of the Kazakhstan Stock Exchange were substantially amended to add provisions pertaining specifically to CRIRSCO reporting standards which will be mandatory for listed subsoil users and investors since 2018.

In order to increase the investment attractiveness of the subsoil use area, a draft of a new **Subsoil Code in Kazakhstan** has been drafted.

### **The Subsoil Code provides the following conceptual changes:**

- Simplification of granting subsoil use rights by analogy of the Australian model by introducing a licensing procedure on the principle of "First come, first served";
- Transition to the international reporting standards on mineral resources ad reserves estimation;
- Providing open access to geological information and transferring it to digital format;
- Stability guarantees for existing subsoil use contracts.

**According to the Code transition to KAZRC standards will be fully completed during 5-year transition period (by 2023).**

# Turkish Miners Association's Notion About UMREK

**Ali EMİROĞLU**

President / Mining Engineer  
Turkish Miners Association



Raw material sources are riches that can be economized where they are, where the economy and its economics have to be reevaluated periodically due to the frequent change of technological and market conditions over time.

The fact that mining exploration and exploitation is more vulnerable to risks and manipulations than other sectors makes the credibility of the data essential for feasibility an important assessment factor.

It is clear that mining companies must best prepare their projects to public authorities, societal circles and financiers in order to earn, manage and finance their mineral resources in the appropriate standards to assist the decision-making process.

Although similar exploration and management methods are applied in each country and company platform in order to search for underground wealth, resources and reserve values, different standards have been developed for reporting.

With the development of globalization and the ability of the capital to move beyond the boundaries of the nation, there has been a great increase in foreign investment demands in the mining sector.

Countries such as Canada, Australia, South Africa and the Russian Federation, where the economy of the mining industry is based, have established their own standards (CIM, JORC, SAMCODES, NAEN etc.) over time, but the need for harmonization with each other with the increase of international investments. The EU Commission and its member states also support these harmonization efforts.

When all these things are thought together, it is necessary to create a common language that is valid all over the world. Thus, the CRIRSCO system "*JORC (Australia-Asia)*" as an international organization and a Civil Society Initiative, bringing together independent institutions of government bodies that empower experts who prepare, approve and approve resource, reserve and feasibility assessments in an international common standard, CBRR, Brazil, CIM, Commission Minera, PERC, KAZRC, MPIGM, NAEN, SAMCODES, SME, USA.



Due to Turkey's membership to UMREK, our country is a candidate to be included in the CRIRSCO organization that will meet an important need for mining. By 2016, a law was enacted with a one-law law and by 2017, a regulation was introduced with a positive path. This is supported by our Association like other non-governmental organizations related to mining.

On 26-27 January 2017, we had the opportunity to participate in the UMREK Workshop organized in Ankara in coordination with the Turkish Ministry of Energy and Natural Resources as the TMD and to transfer our views to the mining community.

Encouraging Turkey to be integrated into this system, this attempt has been the right forefoot of the Ministry for start-up funding and organization.

However, the creation of the UMREK within the Ministry underscores the independence needed by the Commission to recognize the great initiative of the Minister in the election of the Commission and its members, which UMREK must possess in accordance with the CRIRSCO conception.

Preparations should be made for UMREK to be able to manage itself, to have an internationally recognized structure with its own financial resources.

The adjusted reserve-resource standards for our country should be established by taking the views of stakeholder NGOs.

The objective criteria should be based on the selection of accredited non-governmental organizations that will accept members of the "Competent Person" who will sign these reports according to their level of vocational qualification and academic education and will have the relevant disciplinary mechanism.

TMD is ready to give any kind of support in the process of transition to the independent structure of the Ministry, as well as to support every positive effort in this regard.



## About Mr. Halim Demirkan

Demirkan was born in Aksaray in 1961 and graduated from Hacettepe University, Department of Mining Engineering in 1982. Between 1989-1990 he attended the project management training program at the Technical University and the Frei University in Berlin. He graduated from Dumlupınar University in 2006 with a master's degree in mining engineering, which started in 1985 at Hacettepe University and was interrupted due to his abroad duty.

He started his career in 1984 as a project engineer with the Etibank's General Directorate – Department of Factory Operations. While he was in the Planning and Coordination Department, he participated in the restructuring of Etibank. In 1992, he resigned from his position in Etibank due to his appointment as the honorary consul of Mongolia to Turkey in 1992.

Between 1992 and 1998, when Mongolia did not have an embassy in Turkey, he acted as the honorary consul of Mongolia and took active roles in establishment and development of the relations of two countries. Meanwhile, he rendered consulting services through his own private company on design, feasibility and mining law matters for the mining projects in Turkey and Mongolia. In 2004, he was awarded with the “Mongolian Honor” prize for his contributions to the bilateral relations between the two countries.

In 2003, he returned to education sector as the General Secretary at the Dumlupınar University (Kütahya). Until 2013, he was active as an advisor of Rector for the foreign relationships of university, Head of the Library Department, Lecturer in the Engineering Faculty (mining law and orders) and being founder techno city of university.

In 2013, he worked as the Factory Manager of Tanzania Pema Mining (TPM), focused on gold exploring, copper and lead production in Tanzania / Mpanda.

In 2015, he worked for Prof. Dr. Ethem TOLGA, the Deputy of Istanbul as a consultant in the Turkish Great National Assembly.

In the same year, he served as a technical advisor to the Energy and Natural Resources Minister Ali Rıza ALABOYUN on mining and energy issues during his ministerial period. After serving as Secretary General of the Coal Manufacturers' Association in 2015, he served as the Director of External Relations at Akçelik Mining Corp. He is also representing the Turkish Mining Development Foundation in Ankara and member of advisory board in same foundation since 2014.

Demirkan has worked in various positions in public and private sectors. He has been involved in various researches and publications in various branches of mining and has also worked in different national and international symposiums and congresses.

He speaks English and German. He is married and has two children.



