Update of the Resource and Reserve Reporting Codes and Guidelines For the Coal Industry

The SAMREC, SAMVAL & SANS Working Committee will give a brief presentation entitled:

"The update of the SAMREC & SAMVAL Codes and SANS 10320: Progress and Changes"

WHEN: Tuesday 31st March 2015, 14:00 – 16:00pm
WHERE: Witbank, The Rec Club, Main Hall (25°56'46.32"S, 29°12'31.67"E)
RSVP: santhoshnie.mathuray@angloamerican.com
Cost: None

The update of the SANS 10320 National Standard : Progress and Changes

Systematic evaluation and reporting of Coal Exploration Results, Inventory Coal, Coal Resources and Coal Reserves

SANS 10320 re-write 2015

Disclaimer:

The SANS 10320:2015 re-write has now passed the ***Committee Draft Stage*** *and is presently at SABS Editing for preparation of the DSS (public enquiry draft SA). As a result of the revision, a number of clauses will differ from the current standard SANS10320:2004 "South African guide to the systematic evaluation of coal resources and coal reserves" , and so any changes are provisional.*

The SANS 10320:2015 Document will be distributed for ***Public Enquiry*** *for comments in approximately three months and the Committee would welcome your input into the final National Standard.*

Please ensure your name is on the attendance / contact list.

The SAMREC Working Group and SANS 10320 Re-write Committee would like to thank the SABS Management for specific permission to present some of the work being undertaken in the re-write of the SANS 10320 Standard, as a preliminary view of the first Public Release.

Why SANS 10320?

- National Standard SANS 10320 provides the **standards, definitions and common terminology** for the estimation, evaluation and reporting of all Coal Exploration Results, Inventory Coal, Coal Resources and Coal Reserves;

- SANS 10320 is a supporting document to the SAMREC Code and must be read in conjunction with the **SAMREC Code**.

- **SANS 10320** applies to all Coal Exploration Results, Inventory Coal, Coal Resources and Coal Reserves within South Africa.

- Use of the Standard in reporting implies that the material referred to in the standard is used in its entirety.

- Provides the methodologies and definitions of the relevant terms that should be considered when preparing Reports on Coal Exploration Results, Coal Resources and Coal Reserves.

Competence

- The **Competent Person's Report** (CPR) is a technical report detailing Coal Exploration Results, Coal Resources and Coal Reserves from which a Public Report is prepared by, or under the direction of a Competent Person or Lead Competent Person;

- A **Competent Person** is a minerals industry professional registered with an organisation with enforceable disciplinary processes with a minimum of five years' relevant experience in the type of deposit under consideration and in the activity which that person is undertaking, and who signs off and accepts full responsibility for the report;

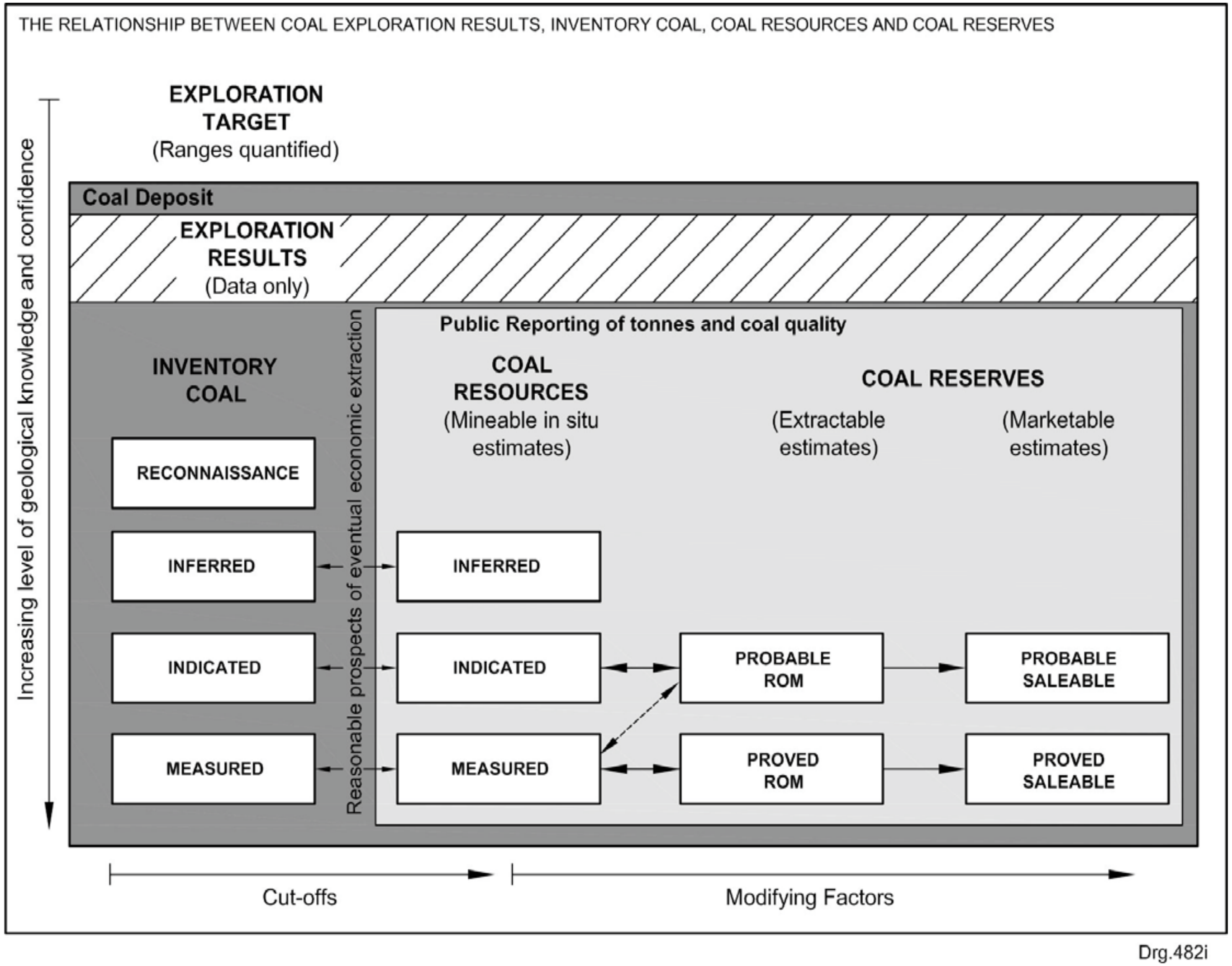
- A **Technical Specialist** is a person providing specialist input to the preparation of a CPR and / or technical report, and signs off their specific contribution.

SANS 10320:2015

Systematic evaluation and reporting of Coal Exploration Results, Inventory Coal, Coal Resources and Coal Reserves

Re-looking at the definitions

Coal Resource and Coal Reserve reporting categories



About Coal Exploration Result reporting

- **Exploration Results** are data and information generated by exploration programmes that might be of use to investors, but which do not form part of a declaration of Coal Resources or Coal Reserves;
- **Exploration Target** is a statement or estimate of the exploration potential of a Coal Deposit in a defined geological setting for which there has been insufficient exploration to estimate Inventory Coal or a Coal Resource;
- Exploration Results, Exploration Targets or Coal Deposits must not be expressed or misrepresented in a way that unreasonably implies the discovery of potentially economic mineralisation, or misrepresented as an estimate of Coal Resources or Coal Reserves.

Inventory Coal

- **Inventory Coal** is a Coal Deposit in the ground that can be estimated without necessarily being constrained by geological, economic potential or other Coal Resource Conversion Factors;
- **Inventory Coal** is sub-divided in order of increasing geological confidence into Reconnaissance Inventory Coal, Inferred, Indicated and Measured Coal Resource categories;
- **Reconnaissance Inventory Coal** is that part of the Coal Deposit where the coal seam is of economic interest and the distribution of verifiable physical points of observation are such that physical continuity can only be assumed at a low level of confidence, and there is limited coal quality data;
- Reconnaissance Inventory Coal can only be **upgraded to Coal Resources by additional geological drilling**;
- Inventory Coal is **not recognised** by the SAMREC Code, nor shall it to be included or presented in Public Reports. Inventory Coal enables a more complete estimate of the in situ Coal Deposit that may be reported on for Government or for internal company reporting purposes.

Key aspects for Inventory Coal

- **Physical point of observation** is a coordinated position from which an accurate measurement of the roof and the floor of the coal seam (*thickness & elevation*) can be made, and from which data an interpretation of the structural continuity of the coal deposit can be made (*core drilling (>95% core recovery) or calibrated geophysical e-logging*);
- Physical point of observation in areas where coal seams are **structurally complex**, more closely spaced points of observation, possibly supported by interpretive data, will be required *(coal seams are faulted, intruded, split, lenticular or subject to significant variations in thickness or coal quality)*;
- **Coal Quality point of observation** is a coordinated position from which accurate sampling from a cored borehole or channel sample over the full coal seam with appropriate analyses of the coal seam is available;
- Coal quality points of observation must be separated into **raw coal** quality points of observation and **washed coal** quality points of observation;
- **Coal Deposit tonnages** cannot be calculated outside of the extrapolation distance for a particular classification class.

Criteria for the Classification of Inventory Coal and Coal Resources

CLASSIFICATION CATEGORY	CONFI-DENCE	DATA INTEGRITY	CONTINUITY REQUIREMENTS			
			Physical		**Coal Quality**	
			Seam Geometry	**Structure**	**Raw Coal Quality**	**Washed Coal Quality**
Reconnaissance Inventory Coal	very low	uncertain or unreliable	assumed at low level of confidence	assumed at very low level of confidence	limited raw data	limited or no washability data
Inferred	low	uncertain or limited	assumed at low level of confidence	assumed at a low level of confidence	assumed at low level of confidence	assumed at low level of confidence
Indicated	moderate	reliable	confirmed	assumed at a moderate level of confidence	assumed at moderate level of confidence	assumed at moderate level of confidence
Measured	high	reliable	confirmed	confirmed	confirmed	confirmed

Criteria for the Classification of Inventory Coal and Coal Resources

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			Physical		Coal Quality	
			Seam Geometry	Structure	Raw Coal Quality	Washed Coal Quality
Reconnaissance Inventory Coal	very low	uncertain or unreliable				
Inferred	low	uncertain or limited				
Indicated	moderate	reliable				
Measured	high	reliable				

The lowest matching criteria in each class determines the appropriate classification category;
The coal quality depends on the expected marketing of the Saleable coal product:
raw coal product = raw coal quality continuity;
else washed product = washability coal quality continuity.

About Coal Resource reporting

- **Reasonable prospects** for eventual economic extraction is that part of the Inventory Coal or Coal Resource for which there is reasonable expectations that it will be economically mineable / extractable to produce a **raw coal saleable product or beneficiated coal saleable product**;

- **'Conversion Factors'** are considerations used in a geological study to convert Coal Exploration Results to Inventory Coal and / or to Coal Resources. Although these factors are similar to the '**Modifying Factors**' used to modify Coal Resources to Coal Reserves, they can be more conceptual in nature;

- **Coal Resource** is coal of economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual **economic extraction**;

Key Issues for Coal Resources

- **In situ density** is the adjusted density as derived from the laboratory determined relative density, adjusted from the as analysed moisture content to the equivalent in situ bed moisture content;
- **Theoretical mining height** is the height of the coal seam, or the optimal selected part of the coal seam that is expected to be mined, based on a geological assessment;
- **A Coal Resource** that will be upgraded by **washing in a coal processing plant** shall be quantified by **washed coal quality data** (*washed coal quality points of observation*);
- **Theoretical product yield** is the laboratory estimate of the yield of the **target product at a specific coal quality**, or at a specific cut-point density, on an undiluted and uncontaminated basis.

Coal Resource reporting tonnages

- **Gross Tonnes in situ Inventory Coal** is the tonnage and coal quality at the in situ seam thickness, contained in the coal seam above the minimum thickness cut-off, after de-rating for previous mining activities and the application of the relevant **coal quality cut-off** parameters. The Gross Tonnes In Situ Inventory Coal does not have reasonable expectation of economic extraction, but may be upgraded to Gross Tonnes in Situ Coal Resources, should circumstances change. (GTIS Inventory Coal and GTIS Coal Resources is for internal calculation purposes only and **not** for public reporting);

- **Mineable Tonnes In Situ Coal Resource** is the tonnage and coal quality, contained in the coal seam, or section of the coal seam, which are proposed to be mined, at the **theoretical mining height,** adjusted by the geological loss factors, with respect to a specific mining method and after the relevant minimum and maximum mineable **thickness cut-offs** and relevant **coal quality cut-off** parameters have been applied.

- For **Public Reporting** purposes all Coal Resource tonnages and coal quality must be reported as a **Mineable Tonnes in situ Coal Resource** (**MTIS** basis), with associated yield, coal quality and moisture content.

About Coal Reserve reporting

- **Modifying Factors** are considerations used in a Pre-feasibility Study or Feasibility Study, to convert Coal Resources to Coal Reserves. Such factors shall include the consideration of and modification by realistically assumed geotechnical, mining, coal quality, coal processing, infrastructural, economic, marketing, legal, environmental, social and governmental factors;
- **Coal Reserve** is the economically mineable part of a Measured and / or Indicated Coal Resource, which includes diluting and contaminating materials and allowances for losses, which may occur when the material is mined or processed and is defined by studies at Pre-feasibility or Feasibility level, as appropriate, that include application of Modifying Factors and such studies shall demonstrate that, at the time of reporting, **extraction could reasonably be justified**.

Coal Reserve Categories

- **Mineable tonnes in situ Coal Reserve** is the economically mineable coal at the **practical mining height,** with included planned contamination, adjusted by the geological loss factors, with the application of the mine layout loss and planned dilution factors, and the associated coal quality and yield of the target Saleable product which shall be commercially marketable. (The MTIS Reserve is for internal calculation purposes only and **not** for public reporting);
- **Run of Mine Coal Reserve** is the tonnage and coal quality, at a specified moisture content, at the practical mining height, which is expected to be recovered after all geological losses, de-rating for previous mining activities, mining losses, dilution, contamination and moisture correction factors have been applied;
- **Saleable Coal Reserve** is the tonnage and coal quality that will be available for sale, either as **raw coal product or after beneficiation** of the ROM Coal Reserve by coal processing operations to coal products at specified coal quality, moisture content and size ranges.

Key Issues for Coal Reserves

- **Practical product yield** is the net yield of a target product due to coal processing operations at a specific coal quality or a specific cut-point density, with reference to a specific coal particle size range, after applying the coal processing discount factors to the theoretical product yield, on a diluted and contaminated basis;

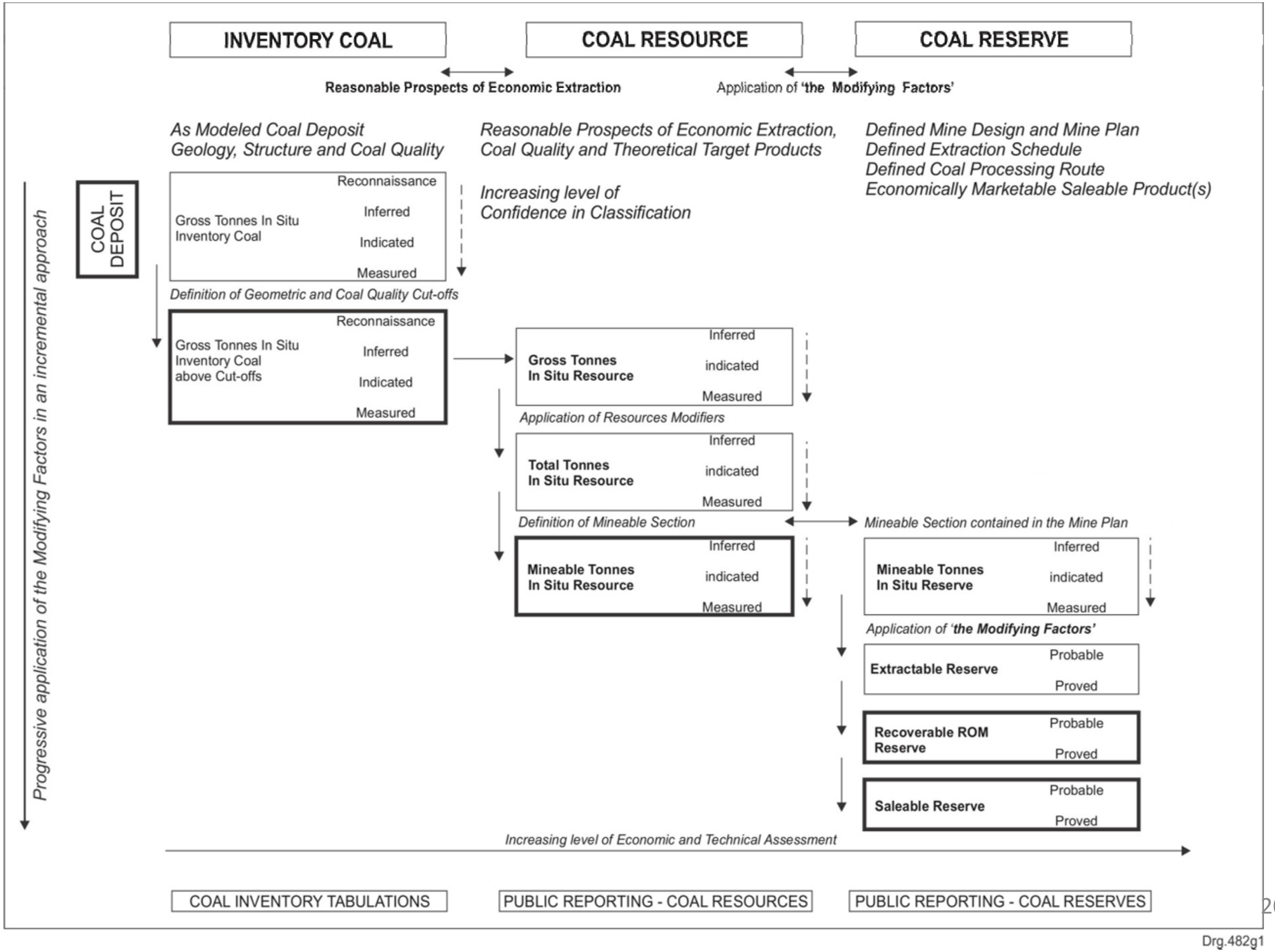
- **Coal quality** of the saleable coal reserve must be reported per product type, with the associated moisture content;

- **Public Reporting** must include both ROM Coal Reserves and Saleable Coal Reserves and associated yield, coal quality and moisture contents.

Issues in Public Resource and Reserve Reporting

- **Coal Resource tonnages** cannot be calculated outside of the extrapolation distance for a particular classification class;
- **Tonnage and Coal Quality** must be reported for all entries in a Report, per classification class into Measured, Indicated and Inferred categories, including the basis of reporting;
- **Moisture content** for all tonnages and coal qualities must be reported;
- **GTIS** is an intermediate calculation step and it is **not** acceptable to quote Coal Resources on a GTIS basis alone;
- **MTIS Resources** is the required basis for **reporting Coal Resources** in Public Reports;
- **ROM Reserves and Saleable Reserves** are the required basis for **reporting Coal Reserves** in Public Reports. MTIS Reserves is not acceptable for reporting purposes;
- **ROM Coal Reserves** must include both tonnages and coal qualities;
- **Saleable Coal Reserves** must be reported per product with associated yield(s), coal quality and moisture content.

The Relationship between Categories




Thank You
sam code
THE SOUTH AFRICAN MINERAL CODES
sam rec
sam val