



Isoglo A-Shift Boss

The answer to safety

The answer to surpassing targets

Setting new standards for your mine.

Making Competency Work

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INTRODUCING ISOGLO A-SHIFT BOSS

We have great pleasure to introduce Isoglo A-Shift Boss to your organisation. This exciting programme is an outflow from the Isoglo Reviver programme and is instrumental in taking your mine to new levels of achievement and to make your successes stand out from the rest.

Isoglo A-Shift Boss is a practical approach. No high level technical programmes but a practical focus on Competency with the added benefits of improving Health and Safety and the added benefit of improvement in production.

You see, at Isoglo we believe: “You look after the conditions and the production will look after itself”. But we realise that there are reasons why conditions are deteriorating in our mines and also that THERE IS A WAY TO GET IT RIGHT AGAIN. That way, amongst others is to get performance right again and the application of competency IN THE WORKING PLACE is where it begins and ends.

Yes, that “way” we believe is Isoglo A-Shift Boss!

Why not allow us the opportunity to come and tell you about Isoglo A-Shift Boss? This is the opportunity you have been waiting for.

We hope this document will provide you with the information you require however, please feel free to request any further information or detail should you so require.

Call Isoglo at (012) 811 2333 or Butch at 082 324 7924 or e-mail info@isoglo.com.

www.isoglo.com



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1 What Isoglo A-Shift Boss Delivers

The problems most often struggled with by managers are:

- How to get your mine to standard?
- What can be done to meet targets and objectives?
- How to achieve improved health and safety targets whilst increasing output?

ISOGLO A-Shift Boss is ready to assist you to do exactly that. Isoglo A-Shift Boss uses top class people with specialist knowledge to analyze the application of competency of individual Shift Bosses in a mine, section or working place by considering all three competency criteria, i.e. cognitive, psychomotor and affective (emotions) skills holistically. Isoglo A-Shift Boss identifies underlying competency application problems that causes performance deficiencies and provides practical solutions for correcting the application of competency and therefore improved performance.

1.1 Reviving Performance

The Performance of an organisation, individual or group of individuals no matter whether it is Health and Safety or Production depends on three basic principles. These are:

Competency: Competency relates to the ability and desire to perform, supported by good knowledge and understanding and the motor skills supporting the required performance. Isoglo considers the proof of competency to be in the application, i.e. we do not measure “knowledge” but measure the work environment in which the person operates to determine if the evidence that the person is competent is reflected in the work environment.

Opportunity: Not even competent persons can perform if they are not provided with the opportunity (space/place/situation) to do so. Providing the opportunity includes providing the appropriate working space matched to the required outcome. Can persons achieve what is required of them in the space (working place) with which they are provided?

Support: Competent persons may partially or wholly fail in the application of their competency if they are not provided with the appropriate managerial, human resources, financial and logistical support to perform the functions required by such competent persons. It includes providing persons with information and leadership, guiding them to an acceptable level of performance. It is often necessary to have formal systems in place to provide for such support. Typically organisations will have Management and Communications strategies in place as part of such supporting programmes.

During the A-Shift Boss programme Isoglo analyses the appropriateness of opportunity and support as it contributes to performance in an organisation and will recommend processes to ensure performance is optimised whilst continuing to focus on improving the application of competency of individual Shift Bosses.



1.2 The role of competency in high level performance

It is true that competency comprises a significant part of performance. Understanding competency is important in identifying shortcomings. Isoglo believes that competency should be evident in application, i.e. I **achieve** my targets in my working place in terms of health, safety and production because I am competent.

Competency comprises three distinct elements. These are a cognitive element, a psychomotor element and an affective element. It is necessary for all three these elements to be reflected in learning in order to achieve competency.

Cognitive Skills: These skills refer to a person's detailed understanding of the theory behind a process or methodology. This theory includes knowledge of legislative and standard procedural requirements associated with the process or methodology. It also provides persons with the reasons for (the why of) performing a function. These skills are usually learned and refined in a training room environment.

Psychomotor (motor) Skills: These are the skills to physically do certain work. The skills are often practiced in simulated (mock-up) environments and later refined in real life (on-the-job) situations. Psychomotor include skills such and driving, installing, marking off, loading, moving, repairing, etc. During the phase of learning psychomotor skills cognitive skills are constantly re-enforced through discussion and assessment.

Affective Skills: Taken from the work "affections" these skills reflect on a person's ability and desire to translate (or not) the cognitive and motor skills into work of an acceptable standard. Often persons have an ingrained affective skill that was learnt from childhood, however, where the desire to perform is not evident in an individual it is usually possible to identify underlying reasons therefore and to implement programmes to support the development of the skill. An example of this may be the inability of newly employed supervisors to delegate tasks in a clear and assertive manner and to ensure that such delegated tasks are performed in accordance with directives. This is often because such new (and often young) supervisors do not have the assertiveness and people handling skills to work with and through subordinates. It is important to provide persons with the reasons for (the why) of performing a function. Understanding the reasons for operating in a specific manner is an important contributor to developing the affective skill, i.e. I will do because I know why I should (or should not) do. It is possible to significantly direct such behavioural competency by providing appropriate supervisory and/or assertiveness training. In addition organisations can direct the "desire to perform" by putting in place people management and support systems that will promote high level performance.

Isoglo A-Shift Boss identifies deficiencies in competency and puts in place the best possible programmes with top notch people to ensure competency is developed and maintained, but much more than that, Isoglo A-Shift Boss measures the application of competency in the working place, and through coaching and controls ensures these competencies are applied.

The ultimate outcome is ... **A SIGNIFICANT IMPROVEMENT IN WORKING CONDITIONS AND THEREFORE A SIGNIFICANT IMPROVEMENT IN PRODUCTION.**

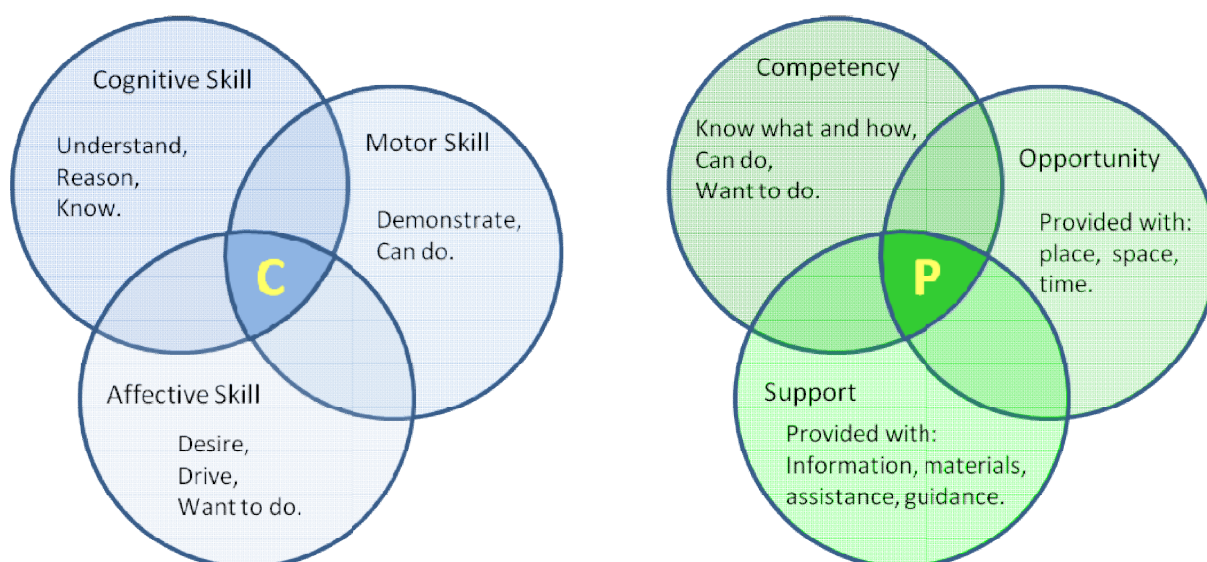
It is important to understand that competency does not necessarily result in performance. Performance in turn is vested in three distinct components. These are:

Competency: As already discussed this relates to the ability and desire to perform, supported by good knowledge and understanding and the motor skills supporting the required performance.

Opportunity: Not even competent persons can perform if they are not provided with the opportunity (space/place/situation) to do so. Providing the opportunity includes providing the technology, equipment, materials and manpower required for such required performance.

Support: Competent persons may partially or wholly fail in the application of their competency if they are not provided with the appropriate managerial, human resources, financial and logistical support to perform the functions required of them. Support also includes providing persons with information and empowering them by giving them the authority to perform at the level required of them. It is often necessary to have formal systems in place to provide for such support. Typically organisations will have management and communication strategies in place as part of such supporting programmes.

The models that follow are a graphic explanation of competency and performance



Competency and Performance Models



2 How does A-Shift Boss work?

With A-Shift Boss we follow a focussed approach to understanding your organisation and identifying the reasons why performance is lacking. We commence with an in-working place assessment of each individual. The assessment focuses on evidence of the **application** of competency in the working place. We look at the conditions, the work methodology, the application and implementation of standards, procedures and good work practices as well as compliance with rules and regulations.

We put Shift Bosses through a programme in groups of 6 by focussing on the two most common reasons for poor application of competency being Strata Control and Planning, however we will not limit the development programme to these two components only.

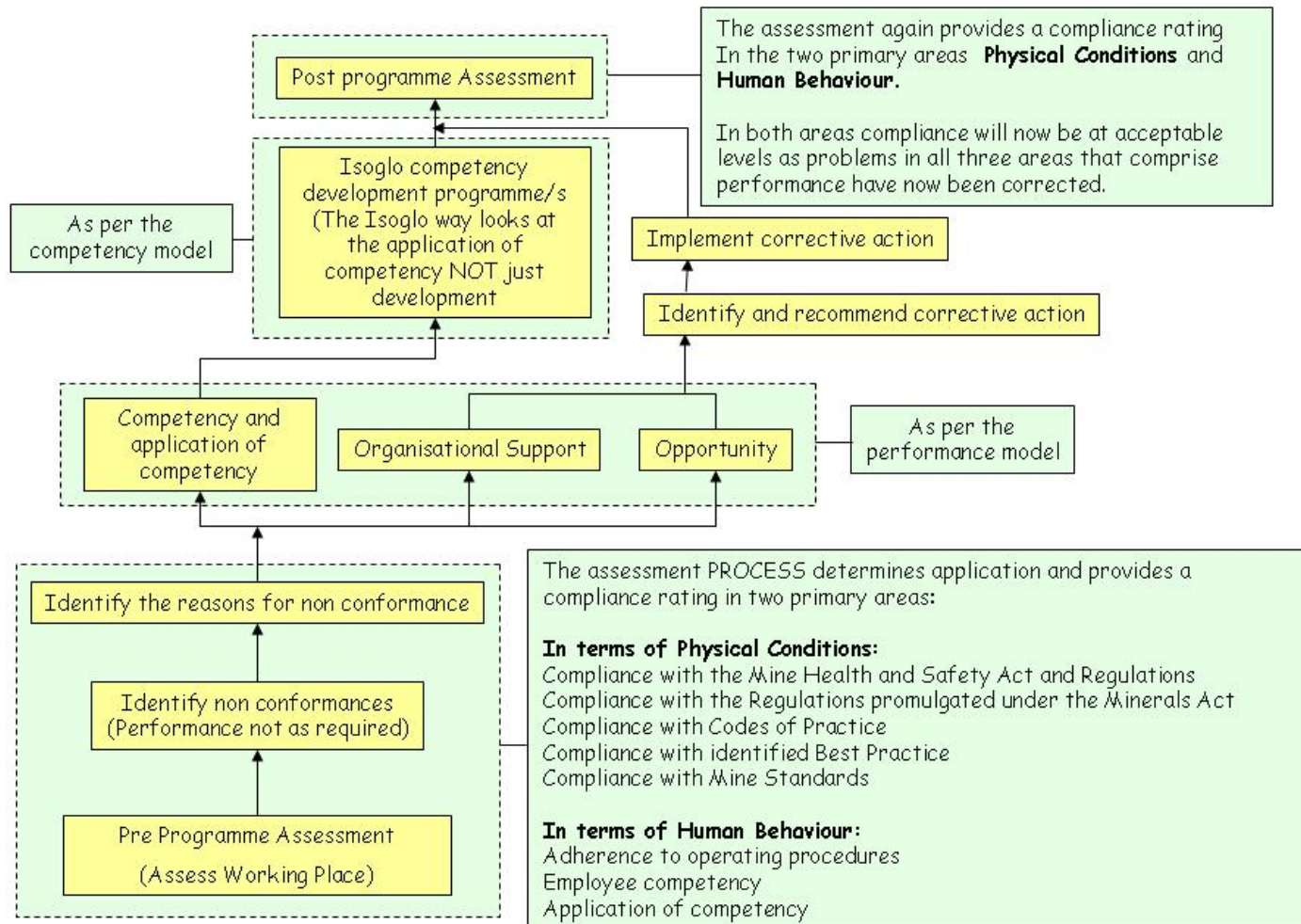
This is followed by a focused one-on-one coaching and assessment approach where the application of competency is developed in the working place. Rather than just assessing the individual for knowledge, the working place is assessed to ensure competency is in fact **applied**. Only when the working place is a model for the application of competence is the learner considered to be competent.

This process usually takes 5 weeks to complete during which learners are involved for a total of 23 days. It is important however to understand that only one week is lecture room based, for the rest of the time the learner is in his or her own working place, continuing with production AND improving the working place to the A-Shift Boss model, both in terms of conditions and performance.

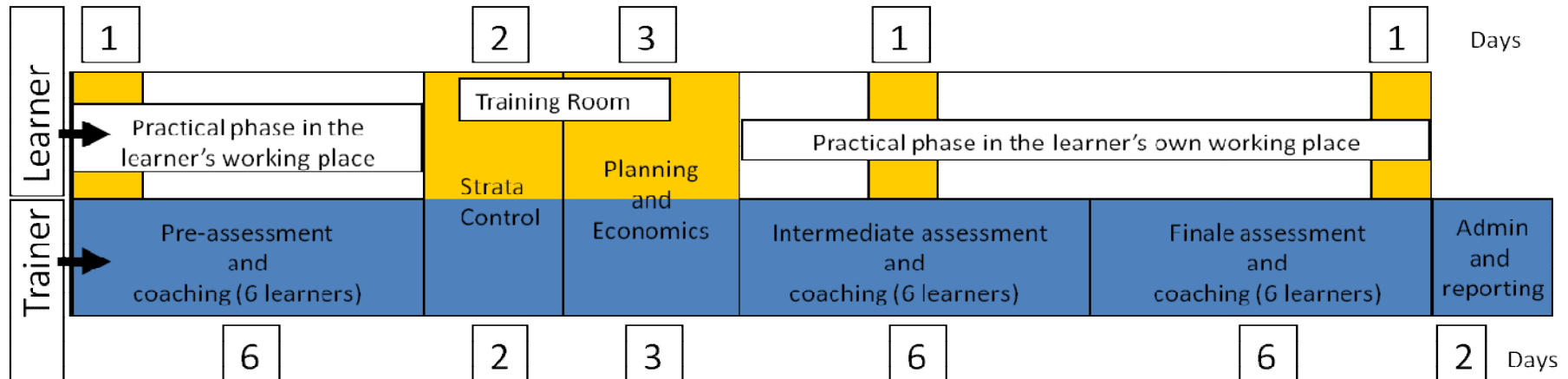
During this process we will look at the other two important components of high level performance as well, these being Opportunity and Management Support and report on these to management to ensure performance is not lacking as a result thereof. Where additional competency development is evident for individuals we will recommend these to management.

The models that follow explain the process in more detail:

Improving Performance (Isoglo Reviver) Model



Process of implementing Isoglo A-Shift Boss



The learner is assessed for application of principles for competency for the purpose of determining the level of competency and determining weakness. General coaching commences to ensure the learner's level of knowledge and ability to apply the knowledge is developed to satisfactory levels.

The learner attends lectures in which the cognitive (knowledge) component is developed for strata control and planning as per the course syllabus. Even though these are considered to be knowledge classes, principles are practiced in a controlled environment whilst under expert coaching and guidance.

The learner is assessed for application of the principles of competency for the purpose of determining progress. Further focused coaching is provided only in the areas in which it is still required. Report back on individual progress is provided to management.

The learner is finally assessed for the application of the principles of competency. For learners that are not yet competent an agreement negotiated with the employer comes into effect. Report back on individual competency is provided to management.



Regular Shift Boss

Fundamental skills in place but limited application



A – Shift Boss

Superior application of skills. Health, safety and production significantly improves.



3 Benefits of implementing A-Shift Boss

There is no doubt that Isoglo A-Shift Boss' approach of developing the application of competency, i.e. ensuring that working places improve in line with the developed competency has the potential to vastly improve delivery both in terms of improved Health and Safety performance and increased production.

Consider the scenario where a gold mine or shaft employs 50 miners. Should each of these miners achieve just one additional blast per month as a result of improvements from the programme and assuming that each miner has a number of 30m stope faces which are mined at 1.2m stoping width and an average grade of 8 g/t, the following direct and measurable financial benefit is possible:

50 miners x 1 additional blast per miner = 50 additional blasts per mine

At 30 m face length this will result in an additional $30 \times 50 = 1500 \text{ m}^2$

An additional $1500 \text{ m}^2 \times 1.2\text{m}$ stoping width x 2.75 t/m^3 rock density = 4950 tons per month per mine.

$4950 \text{ tons} \times 8 \text{ g/t} = 40\,000$ grams per month additional gold produced.

$40\,000 \text{ grams} \times 0.032 = 1280$ oz (troy) of gold.

$1280 \text{ oz} \times \$900 \text{ per oz} \times 8.5 \text{ (R/\$)} = \text{R}9\,792\,000$ per mine per month.

The direct measurable financial benefit from implementing Isoglo A-Shift Boss is:

R9 792 000 per month

The added benefit of improved health and safety which will result in less accidents and therefore a further cost saving AND also improved labour relations is at least as important if not more so than the direct financial benefit from implementing Isoglo Reviver.

Isoglo believes it is clearly of significant benefit to any mine to implement the Isoglo Reviver programme to partake in the benefits that it delivers AND to be the manager that had the vision and presence to improve the mine to previously unknown heights.



4 Organisation Details

The following information about the organisation is supplied:

Company Name	Isoglo (Pty) Ltd
Company Registration Number	2008/020479/07 (Previously operated as sole proprietorship)
Country of Registration	Republic of South Africa
Physical Address	Grootfontein CE, 258 Rosanne street, Tiegerpoort, Pretoria South Africa
Postal Address	PO Box 11596 Tiegerpoort, 0056 Pretoria South Africa
Telephone number/s	+27 (0) 12 811 2333
Fax number/s	086 564 5795
E-mail Address	admin@isoglo.com
Designated Authorised Representative for the Project	<p>Name: Butch Roos</p> <p>Position: CEO</p> <p>Telephone: +27 (0) 12 811 2333</p> <p>Mobile: +27 (0) 82 324 7924</p> <p>Fax: 086 564 5795 (SA only) +27 (0) 12 811 2333 (int)</p> <p>E-mail: butchr@isoglo.com</p>

5 Company Profile

Isoglo currently have offices in Johannesburg and Pretoria and have available a number of well qualified and experienced staff.

The Chief Executive Officer of Isoglo is Tielman (Butch) Roos, a qualified Mine Manager and Mining Engineer who has extensive Management, Health and Safety, Quality Management and Mining Training Experience as well as extensive SETA experience with the MQA (having been a senior manager at the MQA for nearly 5 years). Butch also has extensive experience



with, Skills Development Legislation and other legislation applicable to Skills Development. He also holds 2 Environmental Control Certificates from the Chamber of Mines.

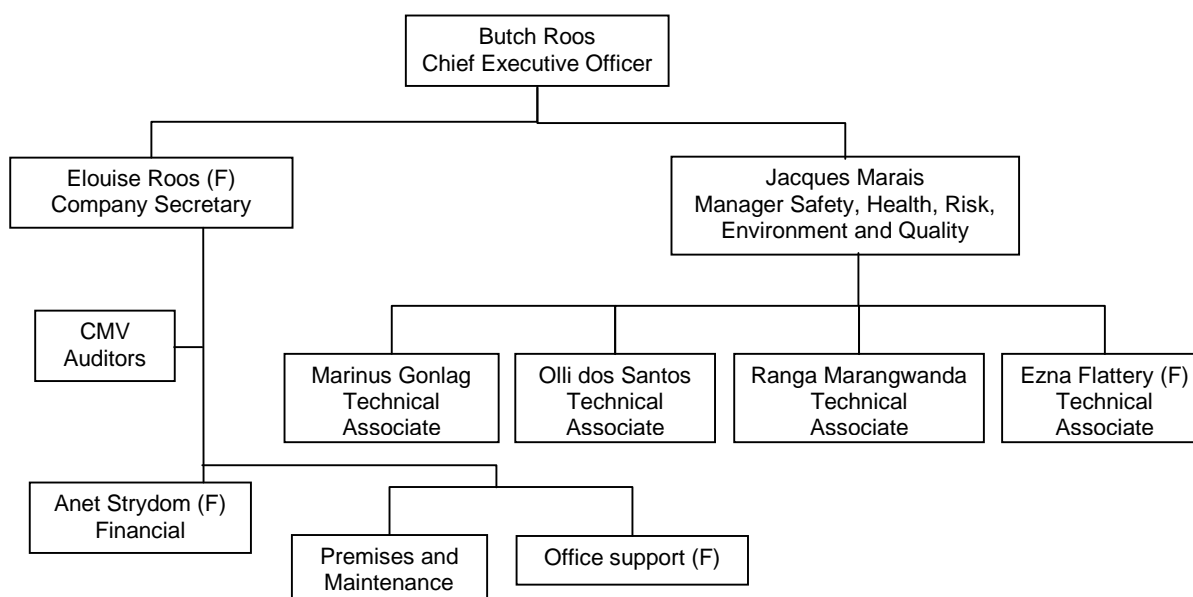
Butch has worked for Gold Fields Academy the Training field for 15 years culminating in his leading the Mine Training Division for Gold Fields of South Africa. Butch also worked for the Department of Minerals and Energy, as Human Resources Manager International for Group 5 Roads and Earthworks and as General Manager for Snowden South Africa a Training and Consulting Organisation in the Downer EDI group.

The Staff of Isoglo includes one other Manager whom is a qualified and experienced Chemical Engineer and Quality Manager who holds a BSc Chemistry from the University of Stellenbosch and Completed an ISO 9000 Auditors Course. (Through SABS). He also Completed an SABS ISO 14001 Training Course (through SABS but presented by Arthur D Little on 14 - 18 Oct 1996), he successfully wrote the SACCQA examination to qualify as an ISO 9000 auditor (certified auditor No. 205 on 15 Jan. 1996) and completed the Bridging Course for ISO 9001:2000 (through SABS on 10 -11 April 2001).

The competency of other consultants includes a Qualified Geologist, a Qualified QMS Lead Auditor and a second Qualified Mining Engineer and Mine Manager.

Combined, Isoglo consultants have more than 200 years of experience, which covers manufacturing, transport, the service industry, the retail industry, open pit and underground mining operations for gold, platinum group elements, copper, lead, zinc, nickel, diamonds, iron ore, mineral sands, coal and other commodities.

The organogramme of the organisation is as follows:



6 Detailed Pricing Structure

The cost of the programme depends on a number of factors. These include the speed with which the programme is delivered (number of trainers that will be deployed for practical coaching and assessment) and the number of learners to be trained per month.

The standard programme, i.e. 6 shift bosses trained per month (22 Shifts) is R180 000 per month. Travelling to and from the mine will be charged at the prevailing Isoglo rates per kilometre for one round trip per week from our offices in Pretoria in cases where consultants are accommodated on site. Reasonable accommodation, commensurate with a senior person (our trainers are qualified mining engineers) will be for the account of the mine. Alternatively daily travelling will be charged to and from the residence/s of the facilitators.

7 Project Team

The following persons will participate in the project. Additional resources will be co-opted as and when required.

Butch Roos – 50 Years of age – 30 years experience

Senior Trainer

ND Metal Mining (1986) - University of Johannesburg; NHD Metal Mining (1986) - University of Johannesburg, Mine Manager's Certificate of Competency (1991) – (DME), IMEC and PMEC (Chamber of Mines of South Africa) 1990, Safety Management - (Chamber of Mines of South Africa); Practical Risk Assessment -- (Chamber of Mines of South Africa)



Butch is a highly experienced Certificated Mining Engineer and Human Resources Development Manager skilled in people handling, with a strong safety, health, environment and quality management as well as technical and financial background. Butch has 26 years experience in the South African Mining and Construction Industries. Butch's experience in the Skills Development and Competency Analyses arena includes a period of five years with the MQA, the SETA for the Mining and Minerals Sector in a senior management position where he was responsible for sectoral research as well as developing the competency standards for the South African Mining and Minerals Sector.

Butch was General Manager for Snowden SHEQ and Training, an organisation specialising in Health and Safety, Risk Management, Quality Management, Environmental Management and Training.

PROJECT MANAGER

As project manager and reviewer, Butch will work closely with you to provide expertise and support as required. Butch will be responsible for coordinating and managing the project, which will include regular communication, progress meetings, client liaison and reports. This

will ensure you are kept informed and will prevent misunderstandings of variations and scope change.

Marinus Gonlag – 54 Years of age – 23 years experience **Senior Trainer**

Joint Matriculation Board with University exemption (1972): National Higher Diploma in Metalliferous Mining (1976-1981) – Technikon of Witwatersrand;



Marinus is a highly experienced Mining Engineer and Strata Control Facilitator skilled in the training of mine officials in strata control, assessment of mine officials in identification and treatment of underground strata control hazards, compiling of underground reports and presenting to senior management on respective mines as well as making a measurable contribution to the current course of mines overall safety record. He was involved in the design and testing of underground timber support and backfill products both as employee of the CSIR and as responsible mine contractor equipped him with invaluable knowledge and experience of strata control and rock mechanics in underground mines.

Marinus' achievements in SMT Mining included exceeding net sales target of 15% per annum over the past 3 years (plus minus 18 million/year) and the Goldfields division winner of quarterly safety award for surface and underground 23/32 quarters measured. Marinus is also fluent in four (4) languages namely English, Afrikaans, Zulu and Xhosa.

Olli Dos Santos – 55 Years of age – 35 years experience **Senior Trainer**

ND Metal Mining (1982) - University of Johannesburg; Mine Manager's Certificate of Competency (1985) – MDP (1988) – University of South Africa



Olli is a highly experienced Certificated Mining Engineer and Mine Manager skilled in people handling, with a strong business management as well as technical and financial background. Olli has 41 years experience in the South African Mining and Construction Industries. Whilst Olli's gained some experience in the Skills Development and Competency Analyses arena when he was contracted by Snowden Mining Industry Consultants as a trainer in strata control, his experience in this arena is primarily vested in his employment as Assistant Manager for the Chamber of Mines Training College and again as Assistant Manager with the Collieries Training College (CTS) for 4 years and 1 year respectively.

Olli was General Manager for Stope Technology Services (Pty) Ltd and Director of Thermoclad Systems (Pty) Ltd both organisations delivering a service to the South African Mining and Minerals sector.



Elouise Roos – 42 Years of age – 8 years experience

Administrator

Matric/Grade 1 (1984,) – Westonaria High school



The administration of the project will be managed by Elouise Roos. Elouise has a number of years experience with the South African Post Office and Gold Fields Training Services (now Gold Fields Academy) respectively. Elouise is currently the Manager Admin for Isoglo.

Elouise is supported by one other person who assists with financial management as well as by CMV Auditors from Pretoria.

9 Quality Assurance

Isoglo complies with the principles of ISO 9001/2008 for quality assurance and is currently in the process of being accredited. .

Furthermore, Isoglo will ensure client satisfaction by seeking agreement on each phase of the project. These will be submitted to the client as interim reports and the interim deliverable will be agreed to.

10 Benefits of using Isoglo

Isoglo (Pty) Ltd is a company that offers innovative solutions to the mining, skills development and other industries. Our consultants have worked successfully with organisations such as Anglo Platinum, Lonmin, Cape Global, 13 different FET Colleges, Ma'aden Gold and Base Metals Company (Saudi Arabia), Next Move (Saudi Arabia), The South African Pharmacy Council and the Mining Qualifications Authority to name but a few.

Isoglo brings together the best in knowledge and experience in the fields of Health, Safety, Environment, Quality and Training by creating associations with top class consultants in these fields.

Isoglo is committed to delivering a quality result by subjecting work to peer review, both internally and, when required, by external technical auditors. Isoglo works according to a Quality Assurance system and embraces the Six Sigma methodology for performance optimisation. Isoglo's commitment to quality management is an integral part of the company's work ethic and drives the company's success. Isoglo strives for high-quality timely solutions and all work is subject to stringent quality control and ongoing review by experienced project managers.

The company is well positioned to obtain accreditation and programme approval from any SETA for any competency areas should this be required at any stage.



At present, the company offers or manages consulting services, auditing and training in the following areas:

- Strata control
- Rock engineering
- Hazard identification
- Risk Management
- Quality Management including ISO 9001 and 17025
- Managing HIV and Aids in the workplace including SANS 16000
- Competency A and B
- Exploitation
- Assessment and moderation
- Supervisory training with an emphasis on hazard identification
- Mineral resource management (including survey, geology, sampling)
- Health and Safety and Environmental Protection including OSHAS 18001 and ISO 14001
- Occupational Hygiene
- Training centre operation and management (includes all training requirements of the client)

Besides the above, Isoglo cemented working relationships with other accredited providers and consultants that provides capacity in other areas for which Isoglo does not specifically provide at present. However, should the need arise Isoglo will build capacity where it is in the interest of our client/s to do so.

The company is expert at assembling, analysing and evaluating data from the projects and operations it deals with. Isoglo is clearly focused on clients' needs in order to provide a relevant solution within budget and on-time.

11 Communication

The company is focused on clearly understanding your needs and providing relevant solutions for your problem. Isoglo prides itself on regular communication with clients, including weekly reporting and/or progress meetings and project delivery meetings. Working closely with clients, ensures that Isoglo delivers outstanding results.



12 Delivery on-time and on-budget

The company is expert at assembling, analysing and evaluating data from projects and operating mines. Isoglo is clearly focused on clients' needs and providing a relevant solution within budget and on-time.

Isoglo is committed to a policy, which ensures the safety and health of its employees, associates and subcontractors. Safety is priority for Isoglo and activities are managed to ensure that the highest standards of safety and health are maintained.

Isoglo is committed to a general duty of care and its application of due diligence in compliance with the appropriate mining and occupational health and safety legislation on each mine site. Isoglo is committed to the involvement of all employees in the formulation and implementation of the health and safety programme.

13 Terms of engagement

This offer remains valid for acceptance for a period of 90 days from 23 March 2009.

14 Notes

The organisation's accountants are CMV.

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END



Annexure A

STRATA CONTROL FOR PRODUCTION SUPERVISORS - COURSE CONTENT

Course Objectives

To give knowledge and skills to Production Supervisors in strata control equipping them to undertake risk assessments and classification, identify sub standard conditions. Have an elementary understanding of the behaviour and hazards associated with rock and to implement basic measures to address and control dangers in rock conditions, in the workings underground.

What is Strata Control?

Strata Control is concerned mainly with the identification of potentially hazardous rock conditions, and consequently, to correctly mine and support poor ground conditions around underground excavations, in order to achieve a safe working place.

Learner Outcome & Evaluation

1. To understand strata control the learner **must be able to identify, know where, why, and how to control poor ground conditions. The learner** must also know the **correct support methods** to be applied in and around underground excavations.
2. This will be achieved through theoretical training and practical sessions underground.
3. The application of knowledge and skills will be evaluated through a proper theoretical test as well as a practical evaluation.

NEED FOR THIS COURSE

The core program includes critical aspects related to the identification and control of rock related hazards in the underground environment. This outcomes based program includes the unit standards:

MnH-G077	(Identification and dealing with rock strata conditions)
MnH-G078	(Identification and dealing with rock strata conditions)
MnH-G038	(Making safe of a workplace by means of barring)
MnH-G016	(Install and remove mechanical props)
MnH-G059	(Install pre-stressed elongated support)
MnH-G050	(Support an underground workplace by means of a mechanical anchor)

Elective unit standards can be slotted into this program to satisfy the needs of the individual, related to the environment in which he/she performs their daily tasks.



CONTENTS

MODULE 1: STATISTICS, ROCK ENGINEERING & GEOLOGICAL DEFINITIONS

Casualty Statistic Analysis
Rock Engineering Definitions
Geological Definitions
Module 1 Exercise Questions

MODULE 2: ALL ABOUT STRESS

Sources of stress
Factors Affecting Stress Levels
Module 2 Exercise Questions

MODULE 3: BLASTING PRACTICES

Blasting Practices
Blasting Techniques
Module 3 Exercise Questions

MODULE 4: SUPPORT

Principals of Support
Barring & Making Safe
Good Quality Support Installation
Width to Height Ratios of Support
Pre-stressing Support
Maintaining the Correct Spacing of Support
Support Resistance
Selecting the Correct Support
Concept of Excavation Size versus
Number of Discontinuities
Excavation “growth” Relative to Jointing
Support Patterns
Module 4 Exercise Questions

MODULE 5: MINING METHODS

Mining Methods
Structural Failures
Mining Span
Pillar Design
Module 5 Exercise Questions

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Annexure B

PLANNING AND ECONOMICS - COURSE CONTENTS

Course Objectives

To give knowledge and skills to Production Supervisors in planning and economics, equipping them to plan and schedule the mining processes for their relevant working areas and to eliminate the wastage associated with delays. To further provide an understanding of the relevance and importance of the individual supervisor in contributing to the financial success of the organisation.

What is Planning?

Planning is the activity of ensuring the right things are scheduled to happen at the right time and that all resources are available and sufficient to ensure what needs to happen will happen at the right time and at the right cost to ensure the success of the operation.

What is Economics?

Economics ensures the learner has an understanding of the importance of maximising mineral production by reducing waste. It also ensures the learner understands the criticality of maximising production to ensure the cost/income ratio results in a sustainable profitable contribution from his/her working place.

Learner Outcome & Evaluation

1. To understand planning and economics the learner must understand the relevance of maximising production by ensuring appropriate and accurate planning. This includes the planning and scheduling of resources.
2. The learner will be required to prove an understanding of the relevance of the factors that controls the economic contribution of his/her working place to the profitability of the mine. Such as face advance, blasting regularity, stoping width, sweeping, unwanted waste from over break or falls of ground, etc.
3. This will be achieved through theoretical training and practical sessions both in the office and underground.
4. The application of knowledge and skills will be evaluated through a proper theoretical test as well as by evaluating (assessing) the improvement in working conditions as a result of the application of such knowledge and skill.



NEED FOR THIS COURSE

The core program includes critical aspects related to the functions of a Shift Boss with regards to mine planning and economics. This outcomes based program includes the unit standards:

- MnH-G579 Plan, organise, lead and control activities (version 2)
- Sur-G207 Plot linear measurements on a plan and calculate quantities
- Geo-G748 Process basic geological information for grade control purposes

Elective unit standards can be slotted into this program to satisfy the needs of the individual, related to the environment in which he/she performs their daily tasks.

MODULE 1: PLAN READING

- Scale on plan
- Elevation
- Dip and Strike
- Spatial orientation
- Colours, conventional signs and position
- Geological features
- Plotting
- Module 1 Exercise Questions

MODULE 2: UNDERSTANDING FAULTS AND DYKES

- Hey, where did the reef go? (Normal, reverse, loss of ground, gain of ground)
- How faults and dykes influence mining
- Module 2 Exercise Questions

MODULE 3: MINING LAY-OUT

- Face shapes
- Overruns (leads/lags)
- Module 3 Exercise Questions

MODULE 4: ECONOMICS

- Area, volume and tonnage
- Grade and mineral
- The influence of stope width
- The influence of face advance
- The influence of loss blasts
- The influence of excessive unwanted waste (over break and falls of ground)
- Module 6 Exercise Questions



MODULE 5:

PLANNING

Face position and shape (1 month, 2 months, 3 months and six months)

Planning around geological features

Planning and scheduling resources

Module 5 Exercise Questions

MODULE 6:

RESOURCES

Labour and labour utilisation

Material requirements and ordering

Equipment requirements and scheduling

Supporting my working face (what needs to happen at the back)

Making sure I have what I need when I need it (scheduling)

Efficiencies

Module 4 Exercise Questions

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LIFE ISN'T ABOUT WAITING FOR THE STORM TO PASS



LIFE IS ABOUT LEARNING TO DANCE IN THE RAIN