Introduction

• Increasingly, as SRK conducts projects in Russia and CIS we have observed ineffective Management Operating Processes and Systems in mining operations.

• Focus of mining activity has been on getting the job done, but without gathering data on the causes of delay, or lost production time, such that timely analysis can be carried out.

• Additionally we observe a failure to effectively link the corporate Business Plan, the Life Of Mine Plan prepared by the Institutes, the annual planning of Operational Activity at site level and the outcome of actual work carried out.

• We frequently see an absence of a Virtuous Management Cycle that influences Mining Business Planning based upon actual work output that minimises production losses whilst delivering output at the lowest level of cost.
**Why do we need effective processes & systems?**

"EFFECTIVE & EFFICIENT MANAGEMENT PROCESSES & SYSTEMS GIVE MANAGEMENT THE INFORMATION THEY NEED TO MAKE DECISIONS."

We need Management Processes & Systems to:
- help us to plan, monitor and measure events or processes that occur within a business;
- and to provide a focus for continuous improvement.
The key element of a Management Operating Process and System is:

The discipline of constantly reviewing the Key Performance Indicators that define the success or failure of achieving business plans and objectives, and taking action accordingly.

The Key words are:

“….discipline….constantly reviewing .....taking action”

It is easier to do this, at all levels within the business, if procedures exist that make such data readily available on a timely basis.

These procedures form the basis of the Management Operating Process and System.
“Success can breed failure unless there is a management process & system in place that constantly encourages debate and thus a process of continuous improvement”.

SRK manage projects to upgrade client systems to meet these criteria.
ACCEPTING THE NEED FOR CHANGE

“If you continue to manage the business the way you have always managed it, you will continue to achieve the same results.”

Business Madness is:

“Continuing to manage the business as you have always managed it, and believing that somehow, “mysteriously”, performance will improve.”
AVOIDING MADNESS -

Making more things happen.

More accurate
More pertinent
More timely

DATA

SYSTEM

ANALYSIS

Improved analysis.
Better team working.
Improved problem solving skills.
Focus on cause rather than effect!!

ACTION

DECISION

Clearer roles and responsibilities.
Less avoidance.
Higher commitment.

PERFORMANCE
THREE TYPES OF BUSINESS SYSTEMS

- **FINANCIAL**
- **MANAGEMENT OPERATING (CONTROL)**
- **PRODUCTION**
# The Three Types of Systems

<table>
<thead>
<tr>
<th></th>
<th>Uses money as the common denominator for communication.</th>
<th>How much money did we make doing what we did (profitability/effectiveness)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FINANCIAL</strong></td>
<td>frequency: Monthly</td>
<td></td>
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<tr>
<td></td>
<td>indicators: Global</td>
<td></td>
</tr>
<tr>
<td><strong>MANAGEMENT OPERATING</strong> (CONTROL)</td>
<td>Uses operational indicators as the common denominator for communication.</td>
<td>How well did we do what we had to do (efficiency)</td>
</tr>
<tr>
<td></td>
<td>frequency: Monthly/weekly/daily and hourly (if necessary)</td>
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<tr>
<td></td>
<td>Specific indicators: e.g. tonnage processed per manshift, Maintenance Hrs of Backlog</td>
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<tr>
<td><strong>PRODUCTION</strong></td>
<td>Uses specification as the common denominator for communication.</td>
<td>What do I have to do (activity management)</td>
</tr>
<tr>
<td></td>
<td>frequency: “One off”</td>
<td></td>
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<tr>
<td></td>
<td>Activity specific: i.e. size of order</td>
<td></td>
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</tbody>
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Can we answer some of the following questions?

* How many hours of work has equipment completed versus annual plan?
* How many hours do we lose annually from equipment breakdowns?
* What are the top causes of equipment breakdowns?
* What is our Capital Equipment programme for the next year?
* How can we improve our organisation so that we can improve our predictions for our Capital Equipment programme?
What Management Operating Processes & Systems should do!

* Record actual performance
* Compare actual performance to an accurate plan
* Ensure plan contains no inherent lost time
* Indicate degree of loss - therefore it prioritises
* Indicate when problem is solved
* Monitor Key Performance Indicators

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**Short Interval Control**

“Daily execution and follow up of work”
Basic Elements of a Management Operating Processes

- Budget
- Master Schedule
- Monthly Plan
- Weekly Plan
- Short Interval Plan
- Daily execution & Follow up
- Variances
- Reporting

Flowchart showing the interrelation between budget, schedule, plan, execution, variances, and reporting.
MANAGEMENT OPERATING PROCESSES & SYSTEMS

- FORECAST
- PLAN
- CONTROL/EXECUTE
- REPORT

PROBLEM RESOLUTION
FORECAST
- Projections & targets focused on business objectives
- Plans performance (resources, costs)
- Normally 3-12 month time frame
- In Natural Resource companies reflects Life Of Mine Plan – Annual-quarter

REPORT
- Achievement measured against business objectives
- Problems highlighted
- Support gained - actions initiated
- Daily/Weekly/Monthly time frame

PROBLEM RESOLUTION
- Structured planning & review meetings
- Input from process controls, Daily/Weekly performance reporting
- Actions planned that address the variances
- Due dates set - and met

PLAN
- Road map by which to achieve business objectives
- Series of detailed actions to achieve required performance levels
- Acts as the basis for ensuring, controlling & assessing achievement
- Normally a Daily/Weekly/Monthly time frame

CONTROL/EXECUTE
- Short Interval Control - hourly/daily
- Constant review of Plan Vs. Actual
- Constant focus upon variances
- Communication between individuals/teams on performance
Example of Mining Business Plan Development

- **Geological model - Resources**
  - Optimisation inputs:
    - Mining methods and layout
    - Geotechnical engineering
    - Metallurgical engineering
    - Extraction strategy
    - Loss and dilution factors
    - Costs – mining/processing/other
    - Commodity price

- **Optimisation**
  - Whittle
  - DRO

- **Mine design**
  - Final pit
  - Underground layout (stopes)
  - Equipment selection

- **Production constraints**
  - Geotechnical
  - Hydrogeological
  - Processing
  - Geographical information
    - Terrain
    - Climate
  - Regional information
    - Work schedule
    - Labour availability/productivity
    - Political/safety situation
    - Religion
  - Operational information
    - Maintenance
    - Availability/Efficiency
    - Supply lines

- **Reconciliation - Evaluation of KPI’s**
  - Variability compared with budget
  - Changing input parameters
    - Resources (exploration)
    - Loss and dilution factors
    - Commodity price
    - Costs (external/actuals)
    - Availability/Efficiency/Productivity
    - Production constraints
    - Cash flow

- **Production schedule - Reserves**
  - LoM/Annual/Monthly/weekly plans
  - Optimization on NPV/recovery
  - Fixed and mobile equipment schedule
  - Visualization

- **Financial model**
  - NPV, IRR, PP, DPP
  - Cash flow
  - Capital plan
  - Taxes, Royalties
  - Equity/loans
  - Sensitivity analysis
  - Risk analysis

- **Business plan**
  - Operational plan

- **Operation**
WHAT DO MANAGEMENT OPERATING PROCESSES & SYSTEMS DO FOR OUR BUSINESSES?

- Define the managerial routines or disciplines required to control the business.
- Provide employees with clear performance expectations.
- Provide the focus for actions and continuous improvement.
- Facilitate management by fact rather than “gut feel” or by “personality”.
- Facilitates “no excuses” management.
- Free up management time for new tasks.
Remembering Always;

“If you continue to manage the business the way you have always managed it, you will continue to achieve the same results.”

& that Business Madness is;

“Continuing to manage the business as you have always managed it, and believing that somehow, “mysteriously”, performance will improve.”
Questions