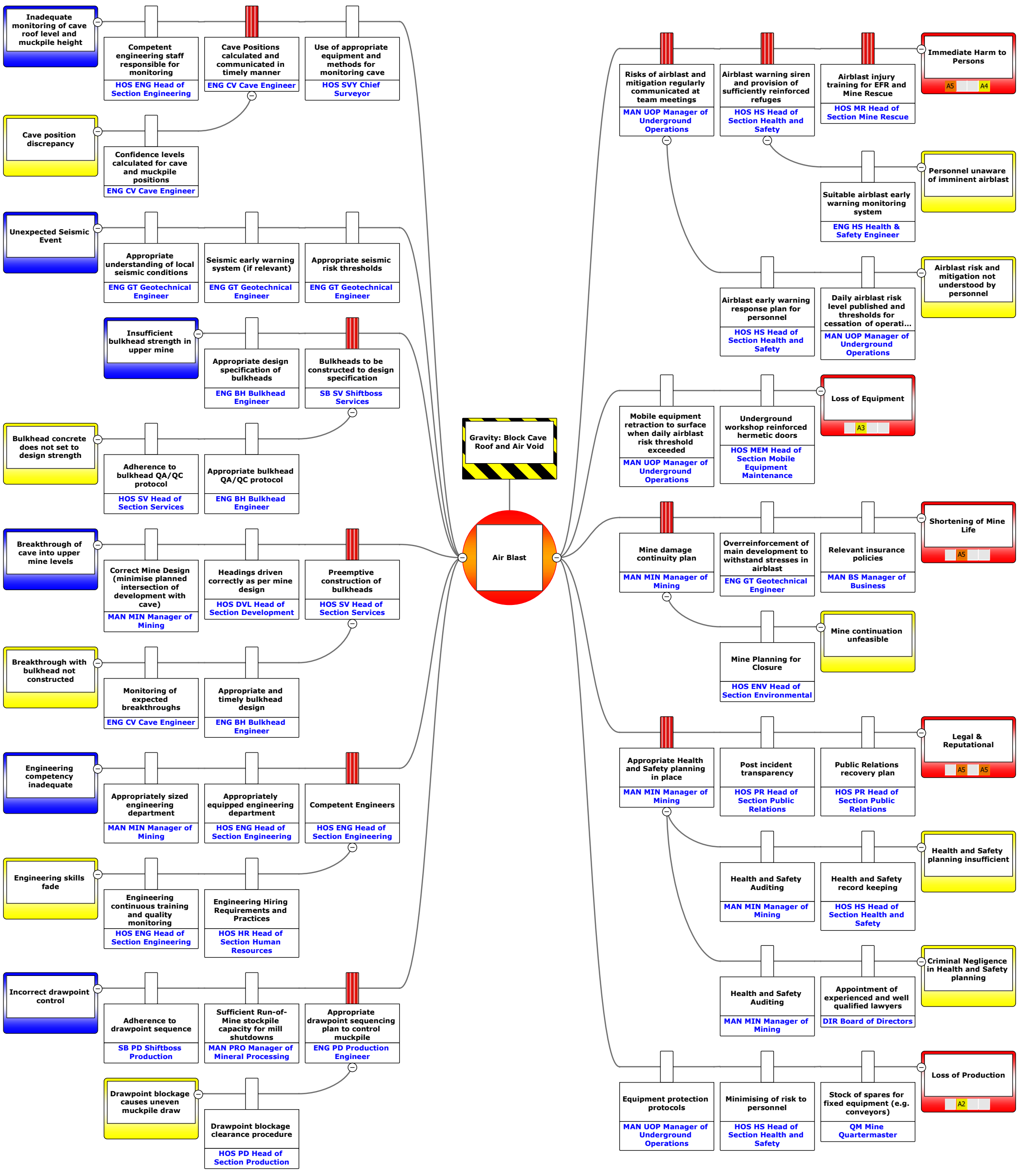
Gravity: Block Cave Roof and Air Void
Air Blast
Inadequate monitoring of cave roof level and muckpile height
Competent engineering staff responsible for monitoring
HOS ENG Head of Section Engineering
Cave Positions calculated and communicated in timely manner
ENG CV Cave Engineer
Use of appropriate equipment and methods for monitoring cave
HOS SVY Chief Surveyor
Cave position discrepancy
Confidence levels calculated for cave and muckpile positions
ENG CV Cave Engineer
Unexpected Seismic Event
Appropriate understanding of local seismic conditions
ENG GT Geotechnical Engineer
Seismic early warning system (if relevant)
ENG GT Geotechnical Engineer
Appropriate seismic risk thresholds
ENG GT Geotechnical Engineer
Insufficient bulkhead strength in upper mine
Appropriate design specification of bulkheads
ENG BH Bulkhead Engineer
Bulkheads to be constructed to design specification
SB SV Shiftboss Services
Bulkhead concrete does not set to design strength
Adherence to bulkhead QA/QC protocol
HOS SV Head of Section Services
Appropriate bulkhead QA/QC protocol
ENG BH Bulkhead Engineer
Breakthrough of cave into upper mine levels
Correct Mine Design (minimise planned intersection of development with cave)
MAN MIN Manager of Mining
Headings driven correctly as per mine design
HOS DVL Head of Section Development
Preemptive construction of bulkheads
HOS SV Head of Section Services
Breakthrough with bulkhead not constructed
Monitoring of expected breakthroughs
ENG CV Cave Engineer
Appropriate and timely bulkhead design
ENG BH Bulkhead Engineer
Engineering competency inadequate
Appropriately sized engineering department
MAN MIN Manager of Mining
Appropriately equipped engineering department
HOS ENG Head of Section Engineering
Competent Engineers
HOS ENG Head of Section Engineering
Engineering skills fade
Engineering continuous training and quality monitoring
HOS ENG Head of Section Engineering
Engineering Hiring Requirements and Practices
HOS HR Head of Section Human Resources
Incorrect drawpoint control
Adherence to drawpoint sequence
SB PD Shiftboss Production
Sufficient Run-of-Mine stockpile capacity for mill shutdowns
MAN PRO Manager of Mineral Processing
Appropriate drawpoint sequencing plan to control muckpile
ENG PD Production Engineer
Drawpoint blockage causes uneven muckpile draw
Drawpoint blockage clearance procedure
HOS PD Head of Section Production
Risks of airblast and mitigation regularly communicated at team meetings
MAN UOP Manager of Underground Operations
Airblast warning siren and provision of sufficiently reinforced refuges
HOS HS Head of Section Health and Safety
Airblast injury training for EFR and Mine Rescue
HOS MR Head of Section Mine Rescue
Immediate Harm to Persons
A5
A4
Suitable airblast early warning monitoring system
ENG HS Health & Safety Engineer
Personnel unaware of imminent airblast
Airblast early warning response plan for personnel
HOS HS Head of Section Health and Safety
Daily airblast risk level published and thresholds for cessation of operati...
MAN UOP Manager of Underground Operations
Airblast risk and mitigation not understood by personnel
Mobile equipment retraction to surface when daily airblast risk threshold exceeded
MAN UOP Manager of Underground Operations
Underground workshop reinforced hermetic doors
HOS MEM Head of Section Mobile Equipment Maintenance
Loss of Equipment
A3
Mine damage continuity plan
MAN MIN Manager of Mining
Overreinforcement of main development to withstand stresses in airblast
ENG GT Geotechnical Engineer
Relevant insurance policies
MAN BS Manager of Business
Shortening of Mine Life
A5
Mine Planning for Closure
HOS ENV Head of Section Environmental
Mine continuation unfeasible
Appropriate Health and Safety planning in place
MAN MIN Manager of Mining
Post incident transparency
HOS PR Head of Section Public Relations
Public Relations recovery plan
HOS PR Head of Section Public Relations
Legal & Reputational
A5
A5
Health and Safety Auditing
MAN MIN Manager of Mining
Health and Safety record keeping
HOS HS Head of Section Health and Safety
Health and Safety planning insufficient
Health and Safety Auditing
MAN MIN Manager of Mining
Appointment of experienced and well qualified lawyers
DIR Board of Directors
Criminal Negligence in Health and Safety planning
Equipment protection protocols
MAN UOP Manager of Underground Operations
Minimising of risk to personnel
HOS HS Head of Section Health and Safety
Stock of spares for fixed equipment (e.g. conveyors)
QM Mine Quartermaster
Loss of Production
A2