

DATE: 05/14/07
TO: Dave Snyder and Greg King
FROM: Tom Regan.

Conceptual Design Report
MAY2007 Ground fall & seismic events
05/14/07summary

Permission:

- I have talked to Todd Duex, Homestake; and Carolyn Weber, Homestake/Adams Collection for permission to use the records as sited.
- Homestake requests the following disclaimer: "Homestake Mining Company makes no representation or warranties, express or implied, as to the accuracy, meaning, or completeness of the dimensions, data, or other information depicted heron or contained herein, and Homestake Mining Company has no liability or responsibility for the accuracy, meaning, or completeness of the dimensions, data, or other information."

Reference Kevin Lesko's action requested 05/04/07:

- 1) Tom Regan and Greg King - could you, with Dave's approval, go through the last decade of records and prepare a summary of the instances and root causes for fall of ground? We heard that the committee would like to see this. I suspect we will find that it was overwhelming due to recent excavation, excavation in formations we will not be concerned with, etc. However, if there are conclusions about concerns in the Yates, we should prepare for this.

I have reviewed the ground fall/seismic event files from Homestake from 1993 to 1998; the last years prior to mine out and closure. Not being a rock mechanic or professional engineer, I can only offer my observations and summary. If more detail and accurate account is required, that will take some one else to research and report.

Basically I was looking for ground fall events and causes the last 10 years or so of actual production mining at the Homestake underground operations.

Falls of Ground and Seismic Events (blue 3-ring binder book 199 to 1998):

Source: Homestake/Adams Collection; used by permission.

Summary comments (speculative):

- Locations were mostly from the 6950 to 7400 foot levels.
- Some events did take place from the 6500 to 6800 foot levels.
- Few events took place above the 5000 foot levels.
- Almost all took place where active production mining areas as taking place.
- Many took place between shifts when people were not around.
- Most were less than 100 tons and many 10 to 50 tons.
- Some were 100 to 500 tons.
- Few were over 500 tons.

Loss Cause Model (speculative):

- Direct Causes:
 - + Engineering Controls inadequate.
 - + Maintenance inadequate.
- Indirect Causes:
 - + High exploitation of ore zones
 - + Remnant mining

- + Stope sequencing
 - + Corroded supports
 - + Failed supports
 - + Structure / corroded support
 - + Mining methods
 - + Pillar mining
 - + Rotten support
 - + Substandard Support
 - + Mining practice / supports
- Suggested learnings:
 - + It should be noted there is a difference between ground failures and rock bursts.
 - + No direct or indirect causes were noted from rock bursts.
 - + Seismic monitoring helps predict and thus control events.
 - + Better stope sequencing and mining controls greatly reduced frequency.
 - + More ground controls and inspections greatly reduced severity and frequency.
 - + Large excavations are possible with better engineering and ground control.

In Memory of personnel fatalities 1991 to 2003 (closure):

Source: "In The Midst Of Life" by Donald D. Toms (public domain)

- + 03/15/1991 Cable bolt struck during installation 7100 21L (Ward Croft)
- + 03/18/1991 Air line rupture 6800 #6 station (George Klien)
- + 03/20/1991 Fell down raise 4100 Yates ore dump (David Schmit)
- + 11/11/1994 Rock fall & fell out of bucket 7250 45-48 stope (James Backus)
It should be noted that this was indirectly related to working at height in a loader bucket and resulted in new procedures that would help manage this type of risk. This was the last fatality at the Homestake mine.

Tom Regan

original message

From: Kevin Lesko [<mailto:KTLesko@lbl.gov>]

Sent: Friday, May 04, 2007 9:50 AM

To: Roggenthen Bill; lanou Lanou; Wang Joseph; wang@geology.wisc.edu; Diwan Milind; Sayler Ben; Tom Regan; King Greg; Snyder Dave; White Martha; Murayama Hitoshi

Cc: Lesko Kevin; DiGennaro Richard; Jacobs Dianna; Severson Trudy

Subject: updated CDR

Greetings fellow authors of the Homestake CDR,

In preparation for a satisfactory siting decision we are preparing a revised and updated version of the CDR. This one would be for public release. This will provide us with an opportunity to update, correct, and prepare the document for general public distribution. The general topics we are discussing are:

- 1) updating organization charts to reflect the comments from the committee (Safety director reporting to the Director)
- 2) Cyberinfrastructure - create a separate office for PR and Cyber
- 3) correction of a few remaining typos, etc.
- 4) inclusion of the discussion on 25T capacity for the u/g
- 5) inclusion of the discussion of fire abatement
- 6) enhancement of the discussion on Native American outreach

Basically, we want to take into account the comments and Questions we received from the NSF and subsequent discussion with the review panel.

<<There are actions for you all below. Please keep reading.>>

Of the existing CDR the part we would remove from the public version would be the discussion of budget. I would propose we leave in the staffing plans (how many people) but not the cost estimates. We can modify the tables and figures so that we present the WBS, but not the \$. We would remove much of chapter 12.

Actions.

1) **Tom Regan and Greg King** - could you, with Dave's approval, go through the last decade of records and prepare a summary of the instances and root causes for fall of ground? We heard that the committee would like to see this. I suspect we will find that it was overwhelming due to recent excavation, excavation in formations we will not be concerned with, etc. However, if there are conclusions about concerns in the Yates, we should prepare for this.

2) Marty White - could you please review chapter 10. We will need to reorient any discussion of safety director's job description to reflect the elevation to deputy lab director status. Also, could you add a discussion on the Integrated Safety Management Committee's role and duties. In general you and Tom should review this chapter and ensure that it reflects any messages we received from the committee. Dianna will take Tom's note about Trauma Centers and add this to the Hospital discussions as well as the hospital consolidation plans.

3) Ben Sayler - could you take the very good discussion about outreach to Native Americans and enhance the discussion in chapter 3. I would suggest a new bolded subsection on this topic. A subsection of about the same length as our answer to the committee would be great.

4) Dick DiGennaro is working on:

25T discussion

updating the ventilation to reflect John Marks' recent memos

updating chapter 7 to reflect the state's current three phase rehabilitation plan

and updating the various figures and org charts

5) Kevin Lesko has a list of various typos and errors that he will oversee,

updating the discussion on permitting in chapter 10

including the most recent RESPEC study in chapter 11

6) Bill Roggenthen - could you update the risk assessment wrt the #5 shaft flooding?

7) Dianna Jacobs has a 2 page punch list of additional items I will not clutter this email with.

That is the general summary of items we've discussed. The rest of you are invited to reread and comment/correct/amend the CDR for public release. It has been several months now, so it should appear as a fresh document and I am sure things will stand out to you. The Questions and Answers are in eroom in the 20 April folder. If you find typos and minor errors, I would suggest noting the page# the error and sending it to Dianna, rather than trying to fix each typo individually. We will run a final typo sweep again.

General Rules and Guidelines for this work:

we are not restricted to 250 pages, but don't go hog-wild with long answers. Lets keep the additions concise and to the point.

we will release many of the appendices (essentially all but the WBS with \$).

I propose we prepare this release for arxiv.org as well as our websites.

Please download the chapters and prepare your responses, offline. When you are ready to edit the document check it out, turn on track-changes, edit the document, and check it back in when you are done. Please refrain from entering multiple copies of a particular chapter with new names or appended initials to the names, eroom keeps back-versions of the document, etc. Always download a fresh and latest version of the document before entering your changes to avoid version sheer. If this is hard for you contact me and we can work something out.

Don't worry about updating the reference and appendices numbers in your edits, we will have to globally fix the document at the end to reflect the altered figures, tables, references, appendices, ... sigh...

Dianna will serve as coordinator for this and I'll, again, serve as the final gatekeeper on the changes.

It would be great to have this ready in a couple of weeks, say by the 18 May for draft changes and 25 May for completed work.

I think we should prepare two documents - CDRMay2007 and a separate volume with the appendices, CDRMay2007Appendices.

If you think of other items please forward your suggestions. I don't want this to be a huge exercise, but we will be expected to release our report soon after any announcement. I'd like to be ready to hit send to arxiv the save day. If there are similar earth science, e&o, and engineering preprint posting services, we should also post it there.

cheers,
Kevin

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