HOMESTAKE MINING COMPANY

P.O. BOX 96 GRANTS, NEW MEXICO 87020

March 10, 1988

RETURN ORIGINAL TO PDR, HQ.

40-8903



Mr. S.E. Reynolds, State Engineer Battan Memorial Building Santa Fe. New Mexico 87503

Re: File No. 3700 - Quarterly Report

Dear Mr. Reynolds:

Submitted herewith in compliance with your orders is a report on the progress of construction of the tailings impound at Homestake Mining Company's mill for the period of November 26 through February 25, 1988. In addition this letter is my certification that the structure meets all the current criteria and is safe for tailings impoundment.

There was no dike building during the reporting period.

A copy of Dr. Kuhn's report is attached which shows that all sections are within the regulatory criteria.

Since there was no dike building during the reporting period there is no data for percentage of fines and in-place density.

Yours truly,

HOMESTAKE MINING COMPANY

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Edward E. Kennedy Director or Environmental Affairs

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Attachments:

xc: Harry Pettengill (NRC) (2 copies) T.G. White T.R. Beck Dr. A. Kuhn (w/o attachments)

DESIGNATED ORIGINAL

Certified By many C. Hord

ALAN K. KUHN, Ph.D., P.E. CONSULTANT IN GEOLOGICAL ENGINEERING AND APPLIED GEOSCIENCES

13212 Manitoba Drive NE. Albuquerque, NM 87111-2955 505-298-9839

March 6, 1988

84-102A

Mr. Eluid Martinez Chief, Technical Division State Engineer Office Bataan Memorial Building Santa Fe, New Mexico 87503

REPORT ON CONDITION OF TAILINGS IMPOUNDMENT HOMESTAKE MINING COMPANY - GRANTS FIRST QUARTER, 1988

Dear Mr. Martinez:

In accordance with the requirements of your office, I have performed the inspection and analyses necessary to evaluate the condition of the tailings impoundment at Homestake Mining Company's Grants mill for the first quarter of 1988. My visual inspection was made on February 29 with Ed Kennedy of Homestake, who provided me with the records of piezometer measurements, monitor point surveys, and crest and water surface elevations measured monthly through the quarter. This letter reports my findings and conclusions on the condition of the impoundment.

Impoundment Operations

Milling operations continued at very low levels but slightly greater than last quarter. Tailings were discharged across the south beach of the east pond in accordance with Amendment No.1 to Spec. RM80-311-S3, and do impoundment buildout occurred. It is expected that sometime in March production will be increased to 18,500 tons per month, at which time the cycloning separation of tailings and embankment buildout will resume. When this occurs the original provisions of RM80-311-S3 will be reactivated.

Visual Inspection

During the visual inspection of February 29 all surfaces were examined for signs of erosion, mass movement, unusual seepage, or other signs of instability. Special attention was given to the south beach of the east pond, where tailings have been discharged during this quarter.

All beaches appear to be stable and at least 50 feet wide. The south beach of the east pond has been widen by recent tailings pours. West pond beaches are considerably wider than the required minimum.

Crests of the impoundment have experienced no discernible change from last quarter except along the west side of the west pond, where the crest has been leveled and lowered somewhat by the Mr. Eluid Martinez March 6, 1988 Page 2

traffic associated with placement of erosion control matting on the outer slope. This has had no deleterious effects on the embankment.

Outer slopes appear to be stable and free of concentrated erosion. The Curlex erosion-control matting being tested on the west slope appears to be limiting wind erosion from that surface, but the plastic mesh that had also been applied over some test panels proved to be unable to stay in place under even slight winds. The plastic mesh has been removed from the test program. Windblown sand tailings continue to accumulate along the north and east slopes of the impoundment due to the effects of snow fencing (near Section 3-3') and of the natural wind shadow.

As part of the windblown contaminant cleanup program mandated by the NRC, Homestake has been scraping surface soils north of the impoundment during this quarter. The excavated soils have been placed against the toe of the west half of the north slops, forming a toe buttress there. Graded sand filters and slotted PVC pipe drains were placed at the toe before the excavated soils were laid in lifts over the toe. This toe fill, which is about 30-40 feet wide and about 10 feet high, appeared to be well constructed, and there was no indication that the fill had altered the seepage conditions or the phreatic surface in the slope.

Assessment of Measurements

Beach Width and Freeboard - Based on the visual indices provided by rebar markers on the beaches and measured elevations of ponds and crests, both beach widths and freeboards remain above minimum required values. The 2/28/88 survey gives the freeboards of the east and west ponds as 5.59 and 6.06 feet, respectively. The narrowest beach is in the southwest corner of the east pond, where the width is greater than 50 feet and will increase as the tailings pour continues in this area.

Piezometers - Despite the rise in pond levels through the quarter, piezometric levels have experienced relatively moderate changes. The largest increase in the phreatic level within the tailings was measured on section 1-1', +0.46 feet in DB-3. Most piezometric levels dropped, the largest being on section 5-5' where ST-3 dropped 1.36 feet and DB-7 declined 0.97 feet. The declines on section 5-5' were predicted in last quarter's report and reflect the dissipation of recharge effects from spraying on the south side of the east pond last year. All other changes were well below one foot.

Monitor Points - As in previous quarters the monitor points were surveyed each month through this quarter. For this quarterly evaluation the results of the latest survey (#91, 2/28/88) were compared with those of #88 of 11/21/87. The largest elevation change, +0.05 feet, was recorded on point D1. This is within Mr. Eluid Martinez March 6, 1988 Page 3

expectable survey error limits and follows an apparent change of -0.02 feet on this point last quarter, so no significance is attached to this apparent change. The largest latitude and departure changes were 0.03 and 0.04 feet, respectively. They are within the range of survey error, as well, and do not appear to represent a trend for the points measured. Therefore, the monitor points do not indicate any sign of settlement or mass movement in the embankment.

None of the measurements on the impoundment this quarter indicate abnormal conditions. The visual observations support this conclusion. Consequently, there is no reason that cycloning and embankment buildout cannot resume under the procedures already established for these activities.

Stability Analyses

All sections used for stability analyses were surveyed last quarter, and no buildout or other substantial changes have occurred to the impoundment during this quarter. Therefore, the factors of safety calculated for last quarter's analyses are still generally applicable this quarter. However, because of the substantial increase in the east pond level (+1.54 feet since last quarter), the two past-pond sections with the lowest safety factors last quarter (5-5' and 8-8') were analyzed again this quarter. Section 3-3' was also analyzed again because its profile has been altered significantly by placement of the toe buttress. The safety factors calculated for these three sections are:

Section	Static		Pseudostatic	
3 = 3 '		2.04	1.32	
5-5'		1.67	1.11	
8-8'		1.66	1.13	

The safety factors for 3-3' have increased substantially, by 0.22 and 0.16, from last quarter because of the toe buttress. For 5-5' the factors have declined 0.04 and 0.03, not significant when considering the inherent errors and randomness in stability analysis methods. The factors for section 3-8' were virtually the same as last quarter. With input parameters for the other sections nearly the same as last quarter, it is clear that the safety factors are essentially the same as those of last quarter except for section 3-3', which has benefitted by placement of fill at the toe. Consequently, all sections exceed the minimum safety factors required by the State Engineer. Mr. Eluid Martinez March 6, 1988 Page 4

Condition of the Impoundment

Visual observations, recorded data, and stability analyses all indicate that the impoundment is stable and in good condition generally. No conditions requiring remedial measures were found. Routine operational procedures and maintenance will be adequate to allow resumption of cycloning and buildout.

If you have any questions about this report, please contact me.

Vours truly, Alan K. Kuhn (6700)

cc: Ed Kennedy, Homestake