

HYDROLOGIC ENGINEERING SUMMARY
PETROTOMICS URANIUM MINE
DOCKET NO.: 40-6659

1. Introduction

The applicant proposes to raise an existing tailings retention embankment at the Petrotomics Uranium Mine near Casper, Wyoming. The proposed embankment raising will raise the crest from elevation 7065 to elevation 7100 feet above mean sea level. The dam will have slopes of 1V on 2H and will be 120 feet wide at the crest. Fifteen feet of freeboard will be provided at all times.

2. Flood Potential

The applicant has evaluated the capability of the proposed tailings reservoir to accommodate the runoff from the Probable Maximum Flood (PMF) series. Based on a review of this information and our independent analyses, we conclude that the reservoir will safely store the entire runoff from a PMF series, as suggested in Regulatory Guide 3.11, Rev. 1. The total drainage area of the reservoir is about 200 acres. The runoff from this drainage area is easily stored if 15 feet of freeboard is maintained.

We also evaluated the potential for an erosion failure of the dam toe due to flooding on adjacent streams. Based on a review of information provided by the applicant, we conclude that the dam location and elevation will preclude erosion to the dam toe, due to flooding and resultant overbank velocities. The dam toe is approximately 35 feet (minimum) above the nearest stream channel; this channel is about 1000 feet west of embankment.

The applicant has not yet documented the capability of the dam embankment to resist erosive wind-wave forces. The applicant has committed to provide analyses which show that the proposed erosion protection on the upstream dam face will be adequate to preclude wave damage to the embankment. The applicant has further committed to provide these analyses for our review and approval prior to construction and placement of the erosion protection.

3. Seepage and Monitoring

The applicant has stated that most of the seepage from the reservoir will be collected downstream of the dam. In order to control this seepage, the applicant has provided three downstream seepage ponds to intercept the seepage and return it by pumping to the next upstream pond and eventually to the reservoir. In addition, the applicant has committed to provide monitor wells to detect any seepage which

may not be contained in the ponds. We conclude that this monitoring meets the intent of Reg. Guide 3.11, Rev. 1 since (1) concentrations exceeding MPC (10 CFR 20) have never been detected during past years of operation, (2) adequate time exists to detect seepage problems and remedy them, and (3) the areal extent of the monitoring is sufficient to detect adverse seepage downgradient of the reservoir.