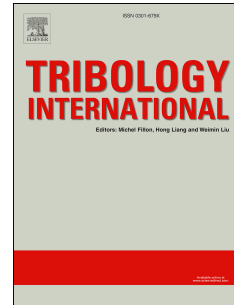


Accepted Manuscript

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PII: S0301-679X(18)30269-X

DOI: [10.1016/j.triboint.2018.05.035](https://doi.org/10.1016/j.triboint.2018.05.035)

Reference: JTRI 5249

To appear in: *Tribology International*

Received Date: 26 February 2018

Revised Date: 21 May 2018

Accepted Date: 24 May 2018

Please cite this article as: López DA, Zapata J, Sepúlveda M, Hoyos E, Toro A, The role of particle size and solids concentration on the transition from moderate to severe slurry wear regimes of ASTM A743 grade CA6NM stainless steel, *Tribology International* (2018), doi: 10.1016/j.triboint.2018.05.035.

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The role of particle size and solids concentration on the transition from moderate to severe slurry wear regimes of ASTM A743 grade CA6NM stainless steel

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Abstract: The role of particle size and solids concentration on the slurry erosion of a stainless steel was studied with base in laboratory tests and data from field inspections of two Pelton turbines. The slurry for the laboratory tests was composed of water and SiO₂ sand particles with mean diameter ranging from 50 to 655 µm and solids concentrations up to 1200 mg l⁻¹. The wear rate increased linearly with solids concentration within the range studied, while the sensitivity of the surface to changes in erosive particle size decreased with the particle size. A critical particle size range for the moderate-to-severe wear regime transition was found, which is practically unaffected by the variety of solids concentrations considered in this study.

Key Words: Slurry erosion, stainless steel, critical particle size, wear regime transition, hydraulic turbines.

1. INTRODUCTION

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