INTRODUCTION

The performance characteristics of rolls in service are critical to mill productivity and to the quality and acceptance of the rolled products. Rolls also represent a significant investment and input to a value analysis of cost per ton rolled. The purpose of this investigation is to present a summary of service problems encountered with forged hardened steel rolls and provide the following analysis:

- Type of service problem
- Characteristics
- Examples (photographs, illustrations)
- Mechanism
- Prevention

Nondestructive testing (NDT) of forged rolls is important to both the roll manufacturer and the roll user. NDT is employed by the roll manufacturer to verify that both the surface and the interior of the roll are acceptable prior to hardening and subsequent to the finish machining operations. End-user roll shops utilize NDT to ensure that grinding removals are adequate for restoration of the roll surface prior to further usage. Common NDT methods and their application are also included as a guide for optimizing roll maintenance procedures.

Roll handling and storage is also a factor that can impact premature roll problems. Guidelines for proper movement and placement of rolls are listed.

Roll nomenclature is described as an aid in communication of roll problems and their location.

In the event of a roll problem, it is recommended that the following applicable steps be taken by the roll user:

Roll Spalls/Breakage - Collect all pieces of the fracture and protect them from oxidation.

Roll Records - Review current and past history for abnormal conditions (mill incidents, grinding removals, length of mill campaign).

Surface Indications - Document (photograph) prior to removal.

NDT - Verify calibration and proper testing procedure.

Communication - Notify the roll manufacturer for assistance and review of the roll manufacturing history.