



RESOURCEFUL - WORLDWIDE

# StripLine

## News

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## EDITORIAL

Cominco's Trail Operations plays an essential role in ensuring that our zinc customers receive the highest quality products and services in the industry. The installation of the new Zinc Jumbo Caster (the Lewis Line) at Cominco's Trail Metallurgical Operations is the latest illustration of our commitment to, and partnership with, steel mill customers. We recognize our role in helping to make customers successful by providing them with an enhanced product. In discussions and joint technical sessions, you told us that a low dross zinc ingot of consistent alloy composition was essential to your process. We took these requirements, and others including increased productivity and improved ergonomics that allow us to stay cost competitive. The culmination of years of work by Cominco and our partner engineering companies to develop an improved zinc casting machine resulted in the Lewis Line Zinc Jumbo Caster.



What role did technology play? Innovative technology is ongoing at Trail in the process design, equipment design, process control and quality assurance of our zinc, and more specifically, in the equipment used to pump, pour, skim, sample and analyze the zinc products. The benefits of the new zinc jumbos are described later in this issue.

In the last several years, Trail personnel have become more involved with steel mill customers through plant visits, and technology transfer sessions. We have teamed up with Marketing and Sales personnel, and researchers at the Product Technology Centre to provide customers with the most up-to-date information regarding processing technology and bath management. We continue to be committed to ISO 9002, and to improving processes that ensure quality and consistency through each operation involved in providing you with your zinc.

The commissioning and start-up of the automated Zinc Jumbo Caster in Trail in 2000 is a fitting way to start the new millennium. I welcome your comments as we move forward into a new era of customer relationships and joint commitment to quality products.

*Bill VanBeek*

Bill VanBeek  
Manager, Zinc Operations  
Trail, B.C.

## SETTING THE STANDARD FOR QUALITY ZINC STRIP JUMBOS

by Alan Karges, Cominco Trail Operations and Joe Troung, Lewis Australia P/L

Cominco's zinc strip jumbos are setting new standards in quality, produced by a new automatic jumbo casting machine at Cominco's Trail Operations.



Cominco decided to increase strip jumbo capacity from 140,000 tonnes per year (mt/yr) to 200,000 mt/yr to meet the increasing demand for Continuous Galvanizing Grade (CGG) jumbos. Different jumbo casting systems were evaluated based on 12 criteria: ripple avoidance, injury reduction, capacity confidence, skimming effectiveness, availability, quality confidence, space requirements, productivity confidence, dross production, expandability, and maintenance and operating costs. The Lewis Caster from Australia was selected.

The new caster will produce 2400 lb jumbos at a rate of 25 jumbos per hour, which is nearly double the output from the existing

jumbo lines at Trail. This new system will augment Cominco's solid reputation for consistent, high quality strip jumbos. Features of the Lewis Caster include:

- Accurate control of pouring to give consistent jumbo weight.
- A specially developed "Low Dross Pouring System" generating 90% less dross during pouring. This should result in a corresponding reduction in entrained dross, making Lewis jumbos and Cominco C-Cast jumbos the lowest-dross products available in the market.
- Automatic robotic dross removal from the jumbos to ensure the highest surface finish and purity of metal.
- Cooling of molten zinc in a static tank to avoid top surface ripple marks.
- Automatic weighing, ensuring accurate weight information on each jumbo.



The new casting line will increase the zinc plant's flexibility because the jumbos can be produced from any of Cominco's three melting furnaces. It

will reduce the amount of zinc cast manually from 140,000 mt/yr to 40,000 mt/yr, and it will also significantly reduce the amount of zinc that must be recycled through the plant by eliminating off-weight jumbos and dramatically reducing the amount of dross generated during pouring. Customers will see lower dross in the zinc ingot and improved alloy consistency through better weight control and continuous alloying.

Input from Cominco's customers was vital in the procurement of the Lewis Caster. The new standards in quality at Cominco's refinery, and the focus on customer satisfaction, demonstrate that zinc and steel really are a winning combination.

Don't forget to visit Cominco's booth at the 92nd Galvanizers' Association Meeting in Toronto, October 29 to November 1, 2000, at the Westin Harbour Castle.

## TECHNICAL FORUM

Cominco's Dr. Gregory Zhang, renowned corrosion expert and author of the book *Corrosion and Electrochemistry of Zinc*, discusses **THE LIMITATIONS OF THE SALT SPRAY TEST**

The salt spray test was originally developed to rapidly evaluate materials for use in marine environments. It was adopted in the late 1930's as a standard corrosion test, ASTM B117, and has become the most widely used test for assessing the corrosion performance of materials.

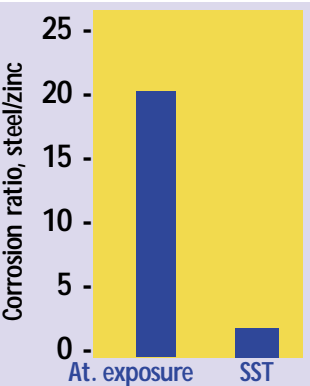


Fig. 1 Corrosion ratio of steel to zinc

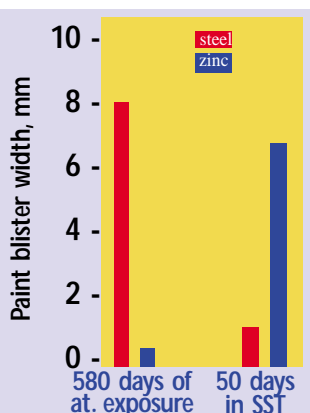


Fig. 2 Corrosion of painted black steel and zinc coated steel

The salt spray test can be a useful tool for quality-control of a specific product or for qualitative comparison of similar materials in some environments such as the splash zone of a sea coast. However, it is a non-realistic test for assessing corrosion performance in atmospheric environments. There is no reliable correlation between the result of the salt spray test and the life of a product. Furthermore, it generates materials performance rankings which are different from or opposite to those observed in the real environments. Thus, it can be very misleading to use the results of the salt spray test to evaluate the real life performance of different materials as demonstrated clearly in Figure 1 for bare metals and in Figure 2 for painted metals.

One important reason for the unrealistic results of the salt spray test is the use of concentrated salt in the spray solution compared to the salt content in the moisture formed in atmospheric environments which is much lower. Another reason is the lack of cyclic drying which is a part of natural atmospheric environments. Salt content and drying effect are both very important to the protectiveness of the corrosion products which determine the long term corrosion rate of exposed metals. In particular, the effect of periodic drying increases the adherence and compactness of the corrosion products of zinc but not those of steel, and therefore, greatly increases the corrosion resistance of zinc relative to steel.