THE EFFECTS OF SOME ALKALI METAL PROMOTORS ON COKE DEPOSITION AND THE CATALYTIC ACTIVITY OF A $CoO-MoO_3-Al_2O_3$ CATALYST. James F. Kelly and Marten Ternan, Energy Research Laboratories, Dept. of Energy, Mines and Resources, c/o 555 Booth Street, Ottawa, Canada, K1A 0G1.

In the catalytic hydrocracking of Athabasca bitumen, coke formation on the catalyst surface leads to rapid catalyst deactivation. In an attempt to reduce catalyst deactivation by coke deposition, a series of Al_2O_3 supported catalysts (2.2% MoO_3-1.15% CoO) promoted with lithium, sodium or potassium carbonate was prepared and evaluated. Metal salts and carbonates were added to alumina by spraying aqueous solutions of the appropriate species onto alumina monohydrate in a mix-muller. Catalyst evaluation experiments were performed in a bottom-feed continuous-flow tubular reactor operated at 450°C, 1.39×10^4 kPa and a liquid volumetric space velocity of 0.29 ks^{-1} based on the total empty reactor volume. All catalyst samples were presulphided with bitumen at 430°C before evaluation. An experimental approach to the determination of the amount of coke deposited on the catalyst during reaction in the presence of bitumen is described. The effects of the investigated carbonate promotors on measured catalyst coke levels are discussed, as well as the resulting changes in the catalytic hydrodesulphurization and hydrodenitrogenation activities due to these promotors.