SITUATION
An extensive drilling program was underway in northwestern Canada and considerable gas production was anticipated from the area. A multi-phase amine facility was being built to ultimately process 1.6 Bscf/D (45,300 e3m3) of gas. Each phase of construction included two amine facilities, each with a capacity of 200 MMscf/D (5,600 e3m3). Four phases or more were anticipated.

CHALLENGE
Gas flowing into the amine facility was expected to contain up to 12% CO₂, resulting in a relatively large acid gas stream. To treat the acid gas stream, each amine train was designed to be directly followed by a four-train acid gas sweetening unit (AGSU) with each AGSU capable of treating approximately 6 MMscf/D of acid gas with an H₂S concentration ranging between 1,300 and 4,000 ppm. The treated CO₂ is vented, but the regulatory body imposed an emissions limit of < 1 ppm H₂S for the amine process facility – a strict standard that eliminated several potential H₂S removal solutions.

SOLUTION
The tight outlet restriction for H₂S concentration was a key factor in selecting the UltraFab Sweet 100 H₂S Removal System as the AGSU. The UltraFab Sweet 100 system uses a patented process that effectively and continuously yields an outlet H₂S concentration of 0 ppm H₂S. Each UltraFab AGSU train consisted of four UltraFab Sweet 100 systems. Each UltraFab AGSU train was capable of treating all gas from a single amine facility. Ultimately, eight UltraFab AGSU trains – 32 UltraFab Sweet 100 systems – were anticipated. Because the facility is located in a region that experiences extreme weather during the winter months, each set of UltraFab AGSU trains was enclosed in a heated building onsite.

RESULTS
Each UltraFab AGSU train continuously removed all H₂S from 24 MMscf/D (670 e3m3) of acid gas containing 2,700 ppm H₂S concentration – approximately 2,500 lb (1,134 kg) of H₂S removed from the acid gas produced daily by each amine facility. Each UltraFab AGSU train consumed approximately 1,840 gal/D (7000 L/d) of chemical, equating to a treatment cost of $0.08/Mscf.
THE ULTRAFAB ADVANTAGE
The UltraFab Sweet 100 process removes 100% of H₂S from gas streams and effectively handles considerable fluctuations in operating parameters. The UltraFab design, coupled with Nalco Champion’s technical expertise and wide-ranging field experience result in greater operational efficiency and lower chemical cost.

UltraFab solutions are available in a wide range of sizes and variations, treating gas volumes ranging from a few Mscf/D to several hundred MMscf/D and reducing H₂S concentration to virtually any outlet specification, including 0 ppm.