Scientific Interpretive Summary (SIS)

Project Title(s): **Freezing rates in domestic freezers and potential for *Campylobacter* reduction in poultry**
Effect of commercial freezing on reduction of *Campylobacter* on poultry

The NZFSA Science Group contracted ESR to conduct experiments on the effect of freezing, storage and thawing on survivability of *Campylobacter jejuni* under simulated domestic and commercial conditions. The experiments used skin-on product as the scientific literature has indicated that the impact of freezing, storage and thawing on *Campylobacter* on skin-off product is likely to be less.

The freezing temperatures applied were approximately -18^{o}C and -30^{o}C so as to simulate domestic and commercial conditions. Sampling was initially daily, and then at weekly or fortnightly intervals.

Samples to be frozen at -18^{o}C were inoculated at varying doses ranging between 4.5 and 5.4 $\log_{10}$ CFU per portion. After 70 days of frozen storage *C. jejuni* was not isolated from two portions while the remaining 22 portions had counts that ranged from 0.7 to 3.6 $\log_{10}$ CFU. Samples to be frozen at -30^{o}C were inoculated with varying doses ranging between 4.5 and 4.9 $\log_{10}$ CFU per portion. All 16 portions remained positive for *C. jejuni* after 70 days with counts from 0.7 to 2.2 $\log_{10}$ CFU. Maximum reduction in numbers was achieved after 6 weeks at -18^{o}C and 4 weeks at -30^{o}C.

The results of each experiment indicated that freezing significantly reduces the counts of *Campylobacter* on contaminated product but there was considerable variation in effect. Further trials with naturally-contaminated product are needed to determine the impact of freezing, storage and thawing on *Campylobacter* numbers on skin-on (and skin-off) product under actual domestic and commercial conditions.