8 Results

Based on the forgoing discussion of the QRA assumptions, inputs, and calculations, the risk was calculated for a range of LNG ISO train consist configurations for each of the three routes and the rail yards and intermodal facilities. The risk results are presented in the form of Individual Risk contours, distance to Individual Risk thresholds, the Societal Risk integral, and Societal Risk as F-N curves for the fixed facilities and along the rail routes. For the proposed mainline routes, the risk results varied with demographics along the railroad. The underlying accident likelihoods and release scenarios are independent of the route demographics; thus, local population around the facilities and along the rail routes directly influences the calculated shipping risk. The risk was benchmarked against another flammable commodity, LPG, which has an established history of rail shipment. The LNG ISO risk results were then compared to quantitative risk criteria developed from those provided in NFPA 59A for stationary LNG plants.

The risk is first presented for a baseline case of a (b)-LNG ISO car consist shipped along the mainline at low speed, at high speed, and for movements in the rail yards and intermodal facilities. This baseline case is then benchmarked against an equivalent energy content of LPG moved along the same routes and in the same rail yards to show that the risks of LNG shipping are comparable yet less than the risks of shipping LPG. Next, the effect of train configuration on the risk profiles for transporting and handling LNG is examined. Finally, the risk to sensitive targets is presented along Route 1 – Hialeah to Port of Miami and Route 2 – Hialeah to Port Everglades.

8.1 LNG ISO Shipping Baseline Risk

The LNG ISO shipping risk was first analyzed for the baseline train configuration since this configuration represents the highest risk. Configuring a train to contain (b) LNG ISO cars in sequence will lead to a probability of multiple car derailment that maximizes the chances of up to (b) cars being involved in a LOC event. The probability of derailment is also highest when the LNG ISO cars are located near the front of the train. Thus, this configuration provides a conservative baseline case for risk comparison.

Baseline Train Configuration:

Configuration 1 (C-1)	(b) LNG ISO cars in sequence LNG ISO car positions: (b)

The IR transects and FN curves were calculated as a function of population density for one mile long sections of track. The maximum IR and SR are also influenced by the magnitude of the potentially affected population within each one mile section. The maximum population density