The Lower Triassic strata in Northwest Margin of Junggar Basin constitute one of the oil-rich strata in China. Its exploration is hindered by the argument on sequence stratigraphic framework and control factors. Therefore, it has great theoretic and practical significant to carry out thorough researches on both sequence stratigraphy and control factors of Lower Triassic in Northwest Margin of Junggar Basin. Sequence boundaries of the study area are identified according to seismic reflection terminal, stacking patterns of sequence as well as changes of lithology. Lower Triassic is divided into one third-order sequence, three fourth-order sequences and six fifth-order sequences. The third-order sequence has complete system tract compositions, including lowstand systems tract (LST), transgressive systems tract (TST) and highstand systems tract (HST). According to synthetic records for calibration of the seismic profile combining with drilling and logging sequence stratigraphic division, seismic as well as drilling and logging data consistency of sequence stratigraphic division of Lower Triassic in the study area has been implemented.

The development model of typical clastic steep slope sequence stratigraphy has been identified in the study area. As a relatively complete third-order sequence, Lower Triassic experienced a complete sedimentary cycle, with the relative lacustrine level being fall-rise-fall. The control factors of sequence development are complex. The relative lacustrine level and the tectonic subsidence control the third sequence boundary and model; the sediment supply ratio and the climate control the fourth sequence boundary and model; the type and intensity of hydrodynamics control the fifth sequence boundary and lithology.

The establishment of isochronous stratigraphic framework of Lower Triassic could provide scientific basis for reservoir prediction in Northwest Margin of Junggar Basin.