Refutation of the prisoner paradox

We assume the method and apparatus of Meth8/VŁ4 with $\tau$autology as the designated proof value, $\exists$ as contradiction, $N$ as truthity (non-contingency), and $C$ as falsity (contingency). The 16-valued truth table fragment is row-major and horizontal.

LET $p, q, r, s$: prisoner A; prisoner B; incarceration; prison term;
& = And; + = Or; - = Not Or; = Equivalent;
$>$ = Imply, greater than, betrays; $<$ = Not Imply, less than, does not betray;
$\%$ = possibility, for one or some; $#$ = necessity, for all;
($\%p>$p) 1 year or lesser charge; ($\%p<$p) = 2 year

From: en.wikipedia.org/wiki/Prisoner's_dilemma

If A and B each betray the other, each of them serves 2 years in prison 

$((p>q)&(q>p))>((p&q)=(r&(%p<$p)))$ ; $TTTF$ $NTTC$ $TTTF$ $NTTC$ (1.2)

If A betrays B but B remains silent, A will be set free and B will serve 3 years in prison (and vice versa)

$((p>q)&(q<p))>((p=r)&(q=(r&((%p<$p)+(p>%p)))))$ ; $TTFT$ $TTTT$ $TTFT$ $TTTT$ (2.2)

If A and B both remain silent, both of them will only serve 1 year in prison (on the lesser charge)

$((p<q)&(q<p))=(p&q)=(r&(%p>$p))$ ; $TTTT$ $TTTT$ $TTTT$ $TTTT$ (3.2)

Eqs. 1.2 and 2.2 as rendered are not tautologous, but also are not contradictory. Eq. 3.2 is tautologous, and not contradictory. In other words, Eqs.1.2, 2.2, and 3.2 are not contradictory, and hence the prisoner paradox is not a paradox.