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# Scheme-9 Reactor-1

Part-2, Case-1

$t_a = 900 \text{ sec}$ ,  $t_m = 1200 \text{ sec}$   
 $k_1 = 0.1$ ,  $k_2 = 0.01$

$NB_t/NA_t = 1.25041$

Exponent  $a = 1.5$   
Exponent  $b = 0.5$   
Exponent  $c = 1$   
Exponent  $d = 1$

$WA = 200$   
 $WB = 62.5205$   
 $NB_t = 3.33443$   
 $V_t = 2.13126$   
 $V_{at} = 1.03126$   
 $Tot.Solv. = 2$   
 $SolA/(SolR+SolA) = 0.5$

$NA_0 = 2.66667$   
 $NB_0 = 0$

Total input = 262.52 kg  
Total output = 262.521 kg

Chemical Balance Error = 0.00070074 kg (% 2.66928e-06)

Solver: Explicit Runge-Kutta (4,5) Variable step (Dormand-Prince Pair)  
Error tolerance: 0.1%

Final Concentrations with Step Size limited to 0.001

$NA \text{ (final)} = 0.0266482$   
 $NB \text{ (final)} = 3.91666e-15$   
 $NR \text{ (final)} = 1.94561$   
 $NS \text{ (final)} = 0.694408$

Final Concentrations with Step Size limited to 0.01

$NA \text{ (final)} = 0.0266481$   
 $NB \text{ (final)} = 3.91714e-13$   
 $NR \text{ (final)} = 1.94561$   
 $NS \text{ (final)} = 0.694411$



