



```
81 No other solutions better than 450
82
83 Optimal solution found (tolerance 1.00e-04)
84 Best objective 4.500000000000e+02, best bound 4.500000000000e+02, gap 0.0000%
85
86 Output optimal solution and the Optimal Obj: 450.0
87
88
89 Obj = 450.0
90
91 Solutions:
92   The total pi = 86.0
93   The total duration time in berth stage = 100.0
94   The total duration time in quay crane scheduling stage = 26.0
95   The total departure time in berth stage= 262.0
96   The total departure time in quay crane scheduling stage = 188.0
97   The total wasted crane work hour according QC0= 9.820705193366813
98   The last depature time in quay crane scheduling stage = 56.0
99
100 The specific solution are as follows:
101   Vessel i: 0:   li: 4,      pi: 25-29,      ai-di: 1-29,      taoi-deltai: 1-27,      periodi: 26,      taoPi_SP-deltaPi_SP
      : 1-7,      periodPi: 6,      c_i: 6681262,      dowork: 7909320,      fa_i: 3
102   Vessel i: 1:   li: 6,      pi: 8-14,      ai-di: 42-54,      taoi-deltai: 42-52,      periodi: 10,      taoPi_SP-deltaPi_SP
      : 42-44,      periodPi: 2,      c_i: 2426435,      dowork: 3163728,      fa_i: 4
103   Vessel i: 2:   li: 5,      pi: 8-13,      ai-di: 25-42,      taoi-deltai: 25-40,      periodi: 15,      taoPi_SP-deltaPi_SP
      : 25-31,      periodPi: 6,      c_i: 3919107,      dowork: 3954660,      fa_i: 2
104   Vessel i: 3:   li: 5,      pi: 13-18,      ai-di: 27-41,      taoi-deltai: 27-39,      periodi: 12,      taoPi_SP-
      deltaPi_SP: 27-29,      periodPi: 2,      c_i: 3028217,      dowork: 3163728,      fa_i: 4
105   Vessel i: 4:   li: 7,      pi: 18-25,      ai-di: 18-34,      taoi-deltai: 18-32,      periodi: 14,      taoPi_SP-
      deltaPi_SP: 18-21,      periodPi: 3,      c_i: 3588314,      dowork: 3954660,      fa_i: 3
106   Vessel i: 5:   li: 7,      pi: 14-21,      ai-di: 49-77,      taoi-deltai: 49-72,      periodi: 23,      taoPi_SP-
      deltaPi_SP: 49-56,      periodPi: 7,      c_i: 5845581,      dowork: 5931990,      fa_i: 2
107 TimeSolveModel: 35.000000
108
109 TimeAll: 38.000000
110
111
```