

80	Total elapsed time = 41.44s									
81										
82	Nodes		Current Node		Objective Bounds			Work		
83	Expl	Unexpl	Obj	Depth	IntInf	Incumbent	BestBd	Gap	It/Node	Time
84										
85	0	0	396.54252	0	1128	-	396.54252	-	-	46s
86	0	0	398.59737	0	972	-	398.59737	-	-	46s
87	0	0	423.46622	0	1106	-	423.46622	-	-	56s
88	0	0	425.19903	0	1544	-	425.19903	-	-	59s
89	0	0	425.65815	0	1477	-	425.65815	-	-	60s
90	0	0	425.83444	0	1473	-	425.83444	-	-	60s
91	0	0	425.83444	0	1471	-	425.83444	-	-	60s
92	0	0	437.00172	0	1627	-	437.00172	-	-	70s
93	0	0	437.05182	0	1638	-	437.05182	-	-	70s
94	0	0	438.00264	0	1917	-	438.00264	-	-	73s
95	0	0	438.00264	0	1913	-	438.00264	-	-	73s
96	0	0	438.16513	0	1658	-	438.16513	-	-	74s
97	0	0	438.32556	0	1897	-	438.32556	-	-	75s
98	0	0	438.32556	0	1894	-	438.32556	-	-	76s
99	0	0	438.32637	0	1841	-	438.32637	-	-	77s
100	0	0	450.85965	0	1282	-	450.85965	-	-	85s
101	0	0	450.85965	0	1262	-	450.85965	-	-	87s
102	0	0	457.30688	0	1526	-	457.30688	-	-	90s
103	0	0	457.30688	0	1509	-	457.30688	-	-	90s
104	0	0	457.77326	0	1498	-	457.77326	-	-	91s
105	0	0	457.77326	0	1497	-	457.77326	-	-	92s
106	0	0	457.77326	0	1554	-	457.77326	-	-	93s
107	0	0	457.77326	0	1553	-	457.77326	-	-	93s
108	0	0	460.70812	0	1329	-	460.70812	-	-	98s
109	0	0	460.70812	0	1323	-	460.70812	-	-	98s
110	0	0	461.27646	0	1472	-	461.27646	-	-	100s
111	0	0	461.31383	0	1273	-	461.31383	-	-	102s
112	0	0	461.33930	0	1430	-	461.33930	-	-	102s
113	0	0	461.36942	0	1462	-	461.36942	-	-	103s
114	0	0	461.36942	0	1520	-	461.36942	-	-	104s
115	0	0	461.36942	0	1504	-	461.36942	-	-	105s
116	0	0	461.84228	0	1285	-	461.84228	-	-	109s
117	0	0	461.93398	0	1490	-	461.93398	-	-	110s
118	0	0	461.99930	0	1591	-	461.99930	-	-	111s
119	0	0	461.99930	0	1586	-	461.99930	-	-	111s
120	0	0	462.02344	0	1636	-	462.02344	-	-	111s
121	0	0	462.03634	0	1743	-	462.03634	-	-	112s
122	0	0	462.03634	0	1742	-	462.03634	-	-	112s
123	0	0	462.20963	0	1882	-	462.20963	-	-	117s
124	0	0	462.20963	0	1862	-	462.20963	-	-	117s
125	0	0	462.20963	0	1778	-	462.20963	-	-	119s
126	0	0	462.20963	0	1763	-	462.20963	-	-	119s
127	0	0	462.26401	0	1849	-	462.26401	-	-	122s
128	0	0	462.26401	0	1751	-	462.26401	-	-	123s
129	0	0	462.26401	0	1675	-	462.26401	-	-	124s
130	0	0	462.36745	0	1679	-	462.36745	-	-	127s
131	0	0	462.36745	0	1663	-	462.36745	-	-	127s
132	0	0	462.36877	0	1807	-	462.36877	-	-	129s
133	0	0	462.36877	0	1801	-	462.36877	-	-	129s
134	0	0	462.49529	0	1679	-	462.49529	-	-	132s
135	0	0	462.49529	0	1651	-	462.49529	-	-	132s
136	0	0	462.50483	0	1686	-	462.50483	-	-	134s
137	0	0	462.50483	0	1680	-	462.50483	-	-	134s
138	0	0	462.50483	0	1769	-	462.50483	-	-	135s
139	0	0	462.50483	0	1754	-	462.50483	-	-	135s
140	0	0	462.60481	0	1745	-	462.60481	-	-	138s
141	0	0	462.60481	0	1711	-	462.60481	-	-	139s
142	0	0	462.60638	0	1955	-	462.60638	-	-	141s
143	0	0	462.60638	0	1934	-	462.60638	-	-	141s
144	0	0	462.73908	0	1918	-	462.73908	-	-	144s
145	0	0	462.73908	0	1880	-	462.73908	-	-	145s
146	0	0	462.73993	0	1977	-	462.73993	-	-	146s
147	0	0	462.73993	0	1917	-	462.73993	-	-	147s
148	0	0	462.86503	0	1677	-	462.86503	-	-	150s
149	0	0	462.87364	0	1679	-	462.87364	-	-	151s
150	0	0	462.87364	0	1667	-	462.87364	-	-	151s
151	0	0	463.00141	0	1869	-	463.00141	-	-	155s
152	0	0	463.00141	0	1828	-	463.00141	-	-	155s
153	0	0	463.01170	0	1785	-	463.01170	-	-	157s
154	0	0	463.08886	0	2111	-	463.08886	-	-	162s
155	0	0	463.08886	0	2021	-	463.08886	-	-	164s
156	0	0	463.08905	0	1972	-	463.08905	-	-	165s
157	0	0	463.08905	0	1946	-	463.08905	-	-	165s
158	0	0	463.25045	0	2083	-	463.25045	-	-	169s
159	0	0	463.25045	0	1995	-	463.25045	-	-	169s
160	0	0	463.25045	0	2128	-	463.25045	-	-	171s
161	0	0	463.25045	0	2113	-	463.25045	-	-	171s
162	0	0	463.40837	0	1766	-	463.40837	-	-	175s
163	0	0	463.40837	0	1764	-	463.40837	-	-	176s

unknown

164	0	0	463.42028	0 2089	-	463.42028	-	-	177s
165	0	0	463.42420	0 2114	-	463.42420	-	-	179s
166	0	0	463.52942	0 2072	-	463.52942	-	-	182s
167	0	0	463.53915	0 2158	-	463.53915	-	-	183s
168	0	0	463.53915	0 1987	-	463.53915	-	-	184s
169	0	0	463.54787	0 2142	-	463.54787	-	-	187s
170	0	0	463.54787	0 2104	-	463.54787	-	-	188s
171	0	0	463.54787	0 2084	-	463.54787	-	-	188s
172	0	0	463.55406	0 2169	-	463.55406	-	-	190s
173	0	0	463.75401	0 2248	-	463.75401	-	-	194s
174	0	0	463.75401	0 2146	-	463.75401	-	-	195s
175	0	0	463.75401	0 2143	-	463.75401	-	-	195s
176	0	0	463.75968	0 2140	-	463.75968	-	-	196s
177	0	0	463.86202	0 2097	-	463.86202	-	-	200s
178	0	0	463.86202	0 2092	-	463.86202	-	-	200s
179	0	0	463.86298	0 2082	-	463.86298	-	-	201s
180	0	0	463.86298	0 2061	-	463.86298	-	-	202s
181	0	0	463.88202	0 2032	-	463.88202	-	-	204s
182	0	0	463.88202	0 2006	-	463.88202	-	-	204s
183	0	0	463.88202	0 1077	-	463.88202	-	-	207s
184	H	0	0	645.0000000	463.88202	28.1%	-	-	228s
185	H	0	0	605.0000000	463.88202	23.3%	-	-	228s
186	0	0	463.88202	0 494	605.00000	463.88202	23.3%	-	239s
187	0	0	463.88202	0 492	605.00000	463.88202	23.3%	-	239s
188	0	0	463.88202	0 843	605.00000	463.88202	23.3%	-	241s
189	0	0	463.88202	0 824	605.00000	463.88202	23.3%	-	241s
190	H	0	0	580.0000000	463.88202	20.0%	-	-	241s
191	0	0	463.88202	0 807	580.00000	463.88202	20.0%	-	242s
192	0	0	463.88202	0 580	580.00000	463.88202	20.0%	-	242s
193	0	0	463.88202	0 601	580.00000	463.88202	20.0%	-	242s
194	0	0	464.09972	0 818	580.00000	464.09972	20.0%	-	243s
195	0	0	465.09352	0 922	580.00000	465.09352	19.8%	-	243s
196	0	0	465.18789	0 803	580.00000	465.18789	19.8%	-	243s
197	0	0	465.27658	0 977	580.00000	465.27658	19.8%	-	243s
198	0	0	465.34201	0 974	580.00000	465.34201	19.8%	-	243s
199	0	0	465.35219	0 979	580.00000	465.35219	19.8%	-	244s
200	0	0	465.35219	0 974	580.00000	465.35219	19.8%	-	244s
201	0	0	465.80540	0 911	580.00000	465.80540	19.7%	-	245s
202	0	0	465.80540	0 898	580.00000	465.80540	19.7%	-	245s
203	0	0	465.92518	0 849	580.00000	465.92518	19.7%	-	245s
204	0	0	465.99822	0 840	580.00000	465.99822	19.7%	-	245s
205	0	0	466.11593	0 855	580.00000	466.11593	19.6%	-	245s
206	0	0	466.16099	0 747	580.00000	466.16099	19.6%	-	246s
207	0	0	466.16920	0 755	580.00000	466.16920	19.6%	-	246s
208	0	0	466.18246	0 749	580.00000	466.18246	19.6%	-	246s
209	0	0	466.18246	0 750	580.00000	466.18246	19.6%	-	246s
210	0	0	466.82047	0 1007	580.00000	466.82047	19.5%	-	247s
211	0	0	466.82047	0 996	580.00000	466.82047	19.5%	-	247s
212	0	0	466.89894	0 959	580.00000	466.89894	19.5%	-	247s
213	0	0	467.00101	0 1131	580.00000	467.00101	19.5%	-	248s
214	0	0	467.01155	0 1138	580.00000	467.01155	19.5%	-	248s
215	0	0	467.02109	0 1118	580.00000	467.02109	19.5%	-	248s
216	0	0	467.02274	0 1118	580.00000	467.02274	19.5%	-	248s
217	0	0	467.54431	0 893	580.00000	467.54431	19.4%	-	250s
218	0	0	467.54431	0 886	580.00000	467.54431	19.4%	-	250s
219	0	0	467.59568	0 796	580.00000	467.59568	19.4%	-	250s
220	0	0	467.59568	0 791	580.00000	467.59568	19.4%	-	250s
221	0	0	467.61246	0 916	580.00000	467.61246	19.4%	-	251s
222	0	0	467.62096	0 925	580.00000	467.62096	19.4%	-	251s
223	0	0	467.62096	0 918	580.00000	467.62096	19.4%	-	251s
224	0	0	467.62157	0 896	580.00000	467.62157	19.4%	-	251s
225	0	0	467.62157	0 889	580.00000	467.62157	19.4%	-	251s
226	0	0	467.68594	0 851	580.00000	467.68594	19.4%	-	252s
227	0	0	467.73856	0 997	580.00000	467.73856	19.4%	-	253s
228	0	0	467.74726	0 859	580.00000	467.74726	19.4%	-	253s
229	0	0	467.78188	0 1023	580.00000	467.78188	19.3%	-	253s
230	0	0	467.78188	0 1015	580.00000	467.78188	19.3%	-	253s
231	0	0	467.78794	0 1027	580.00000	467.78794	19.3%	-	253s
232	0	0	467.83158	0 1121	580.00000	467.83158	19.3%	-	254s
233	0	0	467.83158	0 1114	580.00000	467.83158	19.3%	-	254s
234	0	0	467.83510	0 1071	580.00000	467.83510	19.3%	-	255s
235	0	0	467.86715	0 1027	580.00000	467.86715	19.3%	-	256s
236	H	0	0	555.0000000	467.86715	15.7%	-	-	256s
237	0	0	467.89601	0 997	555.00000	467.89601	15.7%	-	256s
238	0	0	467.90524	0 1027	555.00000	467.90524	15.7%	-	256s
239	0	0	467.90759	0 1060	555.00000	467.90759	15.7%	-	257s
240	0	0	467.92451	0 1153	555.00000	467.92451	15.7%	-	258s
241	0	0	467.92451	0 1101	555.00000	467.92451	15.7%	-	258s
242	0	0	467.92452	0 1116	555.00000	467.92452	15.7%	-	258s
243	0	0	467.92452	0 1121	555.00000	467.92452	15.7%	-	258s
244	0	0	467.92861	0 1153	555.00000	467.92861	15.7%	-	259s
245	0	0	467.94067	0 432	555.00000	467.94067	15.7%	-	260s
246	0	0	467.94067	0 320	555.00000	467.94067	15.7%	-	265s
247	0	0	467.94067	0 927	555.00000	467.94067	15.7%	-	267s

unknown

248	0	0	467.94067	0	914	555.00000	467.94067	15.7%	-	267s
249	0	0	467.94067	0	769	555.00000	467.94067	15.7%	-	268s
250	0	0	467.94067	0	768	555.00000	467.94067	15.7%	-	268s
251	0	0	468.22267	0	728	555.00000	468.22267	15.6%	-	269s
252	0	0	468.59881	0	741	555.00000	468.59881	15.6%	-	269s
253	0	0	468.68062	0	734	555.00000	468.68062	15.6%	-	269s
254	0	0	468.71865	0	735	555.00000	468.71865	15.5%	-	269s
255	0	0	468.73076	0	733	555.00000	468.73076	15.5%	-	269s
256	0	0	468.73139	0	734	555.00000	468.73139	15.5%	-	269s
257	0	0	469.16149	0	764	555.00000	469.16149	15.5%	-	270s
258	0	0	469.21388	0	764	555.00000	469.21388	15.5%	-	271s
259	0	0	469.23952	0	799	555.00000	469.23952	15.5%	-	271s
260	0	0	469.29684	0	838	555.00000	469.29684	15.4%	-	271s
261	0	0	469.29925	0	817	555.00000	469.29925	15.4%	-	271s
262	0	0	469.62370	0	804	555.00000	469.62370	15.4%	-	272s
263	0	0	469.74279	0	823	555.00000	469.74279	15.4%	-	273s
264	0	0	469.77516	0	1017	555.00000	469.77516	15.4%	-	273s
265	0	0	469.84125	0	828	555.00000	469.84125	15.3%	-	273s
266	0	0	469.85265	0	816	555.00000	469.85265	15.3%	-	273s
267	0	0	469.85826	0	822	555.00000	469.85826	15.3%	-	273s
268	0	0	470.09634	0	935	555.00000	470.09634	15.3%	-	275s
269	0	0	470.09634	0	928	555.00000	470.09634	15.3%	-	275s
270	0	0	470.16327	0	749	555.00000	470.16327	15.3%	-	275s
271	0	0	470.17830	0	684	555.00000	470.17830	15.3%	-	275s
272	0	0	470.18596	0	714	555.00000	470.18596	15.3%	-	275s
273	0	0	470.26010	0	790	555.00000	470.26010	15.3%	-	276s
274	0	0	470.26010	0	752	555.00000	470.26010	15.3%	-	277s
275	0	0	470.26010	0	751	555.00000	470.26010	15.3%	-	277s
276	0	0	470.26216	0	841	555.00000	470.26216	15.3%	-	277s
277	0	0	470.26216	0	786	555.00000	470.26216	15.3%	-	277s
278	0	0	470.26271	0	817	555.00000	470.26271	15.3%	-	278s
279	0	0	470.26271	0	814	555.00000	470.26271	15.3%	-	278s
280	0	0	470.26549	0	833	555.00000	470.26549	15.3%	-	278s
281	0	0	470.26549	0	834	555.00000	470.26549	15.3%	-	278s
282	H	0	0			535.0000000	470.26549	12.1%	-	279s
283	0	0	470.27313	0	888	535.00000	470.27313	12.1%	-	279s
284	0	0	470.27313	0	883	535.00000	470.27313	12.1%	-	279s
285	0	0	470.27418	0	838	535.00000	470.27418	12.1%	-	280s
286	0	0	470.42291	0	1027	535.00000	470.42291	12.1%	-	281s
287	0	0	470.42291	0	1013	535.00000	470.42291	12.1%	-	281s
288	0	0	470.52437	0	903	535.00000	470.52437	12.1%	-	282s
289	0	0	470.53305	0	855	535.00000	470.53305	12.0%	-	282s
290	0	0	470.59607	0	891	535.00000	470.59607	12.0%	-	283s
291	0	0	470.60349	0	852	535.00000	470.60349	12.0%	-	283s
292	0	0	470.60349	0	851	535.00000	470.60349	12.0%	-	283s
293	0	0	470.68150	0	920	535.00000	470.68150	12.0%	-	284s
294	0	0	470.68574	0	826	535.00000	470.68574	12.0%	-	285s
295	0	0	470.71238	0	735	535.00000	470.71238	12.0%	-	285s
296	0	0	470.73134	0	789	535.00000	470.73134	12.0%	-	286s
297	0	0	470.74154	0	766	535.00000	470.74154	12.0%	-	286s
298	0	0	470.74154	0	752	535.00000	470.74154	12.0%	-	286s
299	0	0	470.74154	0	677	535.00000	470.74154	12.0%	-	286s
300	0	0	470.75617	0	782	535.00000	470.75617	12.0%	-	287s
301	0	0	470.75617	0	780	535.00000	470.75617	12.0%	-	287s
302	0	0	471.13805	0	395	535.00000	471.13805	11.9%	-	288s
303	0	2	471.13805	0	395	535.00000	471.13805	11.9%	-	289s
304	3	8	471.71145	2	439	535.00000	471.44505	11.9%	402	290s
305	192	153	508.33332	23	135	535.00000	475.00000	11.2%	225	295s
306	436	307	cutoff	55		535.00000	475.00000	11.2%	214	300s
307	682	458	495.00000	42	249	535.00000	475.00000	11.2%	240	306s
308	H	694	236			475.0000000	475.00000	0.00%	246	306s
309										
310	Cutting planes:									
311	Learned: 90									
312	Gomory: 33									
313	Cover: 662									
314	Implied bound: 29									
315	Clique: 32									
316	MIR: 247									
317	StrongCG: 110									
318	Flow cover: 55									
319	GUB cover: 109									
320	Zero half: 38									
321	RLT: 117									
322	Relax-and-lift: 68									
323	BQP: 36									
324										
325	Explored 709 nodes (375472 simplex iterations) in 306.40 seconds (569.51 work units)									
326	Thread count was 8 (of 8 available processors)									
327										
328	Solution count 6: 475 535 555 ... 645									
329										
330	Optimal solution found (tolerance 1.00e-04)									
331	Best objective 4.7500000000000e+02, best bound 4.7500000000000e+02, gap 0.0000%									

```

332 Optimal Obj: 475.0
333 Obj = 475.0
334 Solutions
335 Vessel i: 0:  li: 5,  pi: 19-24,  ai-di: 3-36,  taoi-deltai: 3-17,  periodi: 14,  taoPi_SP-deltaPi_SP: 3-7,  periodPi: 4,  betaNi: 8,  bi: 14,  Txijt:
70,  o1i: 70,  o2i: 80,  o3i: -250,  o4i: 160,  Ti: 60
336 Vessel i: 1:  li: 5,  pi: 14-19,  ai-di: 15-43,  taoi-deltai: 15-22,  periodi: 7,  taoPi_SP-deltaPi_SP: 15-17,  periodPi: 2,  betaNi: 4,  bi: 7,  Txijt
: 35,  o1i: 35,  o2i: 40,  o3i: -125,  o4i: 80,  Ti: 30
337 Vessel i: 2:  li: 5,  pi: 8-13,  ai-di: 30-60,  taoi-deltai: 30-34,  periodi: 4,  taoPi_SP-deltaPi_SP: 30-31,  periodPi: 1,  betaNi: 3,  bi: 4,  Txijt:
20,  o1i: 20,  o2i: 20,  o3i: -75,  o4i: 60,  Ti: 25
338 Vessel i: 3:  li: 5,  pi: 8-13,  ai-di: 6-21,  taoi-deltai: 6-11,  periodi: 5,  taoPi_SP-deltaPi_SP: 6-8,  periodPi: 2,  betaNi: 3,  bi: 5,  Txijt: 25
,  o1i: 25,  o2i: 40,  o3i: -75,  o4i: 60,  Ti: 50
339 Vessel i: 4:  li: 6,  pi: 8-14,  ai-di: 12-44,  taoi-deltai: 12-24,  periodi: 12,  taoPi_SP-deltaPi_SP: 12-15,  periodPi: 3,  betaNi: 8,  bi: 12,
Txijt: 72,  o1i: 72,  o2i: 60,  o3i: -234,  o4i: 160,  Ti: 58
340 Vessel i: 5:  li: 5,  pi: 19-24,  ai-di: 21-60,  taoi-deltai: 21-33,  periodi: 12,  taoPi_SP-deltaPi_SP: 21-24,  periodPi: 3,  betaNi: 7,  bi: 12,
Txijt: 60,  o1i: 60,  o2i: 60,  o3i: -225,  o4i: 140,  Ti: 35
341 Vessel i: 6:  li: 5,  pi: 13-18,  ai-di: 29-59,  taoi-deltai: 29-34,  periodi: 5,  taoPi_SP-deltaPi_SP: 29-31,  periodPi: 2,  betaNi: 3,  bi: 5,  Txijt
: 25,  o1i: 25,  o2i: 40,  o3i: -75,  o4i: 60,  Ti: 50
342 Vessel i: 7:  li: 6,  pi: 28-34,  ai-di: 45-82,  taoi-deltai: 45-50,  periodi: 5,  taoPi_SP-deltaPi_SP: 45-47,  periodPi: 2,  betaNi: 3,  bi: 5,  Txijt
: 30,  o1i: 30,  o2i: 40,  o3i: -78,  o4i: 60,  Ti: 52
343 Vessel i: 8:  li: 5,  pi: 29-34,  ai-di: 8-55,  taoi-deltai: 8-23,  periodi: 15,  taoPi_SP-deltaPi_SP: 8-12,  periodPi: 4,  betaNi: 9,  bi: 15,  Txijt:
75,  o1i: 75,  o2i: 80,  o3i: -275,  o4i: 180,  Ti: 60
344 Vessel i: 9:  li: 5,  pi: 24-29,  ai-di: 13-43,  taoi-deltai: 13-22,  periodi: 9,  taoPi_SP-deltaPi_SP: 13-16,  periodPi: 3,  betaNi: 5,  bi: 9,  Txijt
: 45,  o1i: 45,  o2i: 60,  o3i: -150,  o4i: 100,  Ti: 55
345 TimeSolveModel: 333.000000
346
347
348
349 TimeAll: 337.000000
350
351
352
353

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