

## Supplementary Materials

Table 1 provides specific information on delayed flights mentioned in Section 4.1, which is important data for the experimental scenario. Delays in Flight 1-32 due to bad weather from the previous period have been delayed until 15:00. During the study period (15:00-16:59), a total of 215 flights needed to be resumed. Airport A is predicted to have 55 approach flights and 63 departure flights. Airport B is predicted to have 39 approach flights and 58 departure flights. For example, the following information can be obtained for the first flight: The flight is a departure flight parked on Apron BL4. The aircraft is medium-sized. The flight is expected to take off from runway 4 of B Airport, and pass through sector 2 and departure point DF1.

Table 1 Details of delayed flights

Flight number	Type	Arrival-departure	Airport	Runway	Apron	Locations	Estimated runway time	Sector
1	M	D	B	4	BL4	DF1	1353	2
2	H	D	A	3	AL6	DF3	1355	4
3	M	D	B	4	BL4	DF1	1356	2
4	M	D	B	4	BL5	DF1	1357	2
5	H	D	B	4	BL2	DF4	1401	4
6	H	D	A	3	AL3	DF2	1403	1
7	H	D	B	4	BL2	DF2	1407	1
8	M	D	B	4	BL5	DF4	1410	4
9	H	D	B	4	BL5	DF4	1411	4
10	M	D	B	4	BL3	DF1	1414	2
11	M	D	B	4	BL3	DF3	1419	4
12	M	D	B	4	BL3	DF3	1421	4
13	M	D	A	1	AL3	DF1	1422	2
14	M	D	B	4	BL1	DF3	1424	4
15	H	D	B	4	BL4	DF1	1427	2
16	M	D	A	3	AL3	DF5	1431	4
17	M	D	A	1	AL4	DF1	1431	2
18	H	D	B	4	BL3	DF1	1432	2
19	M	D	A	3	AL6	DF6	1438	2
20	M	D	B	4	BL4	DF1	1442	2
21	M	D	A	3	AL1	DF2	1445	1
22	H	D	B	4	BL5	DF3	1445	4
23	H	D	A	3	AL2	DF2	1447	1
24	M	D	A	1	AL2	DF6	1449	2
25	M	D	A	3	AL2	DF2	1450	1
26	M	D	A	1	AL4	DF1	1451	2

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27	M	D	A	3	AL2	DF6	1453	2
28	M	D	B	4	BL5	DF3	1453	4
29	H	D	A	3	AL2	DF2	1455	1
30	H	D	A	1	AL1	DF4	1458	4
31	M	D	B	4	BL3	DF4	1458	4
32	M	D	A	3	AL3	DF1	1459	2
33	H	A	A	2	AL5	AF1	1501	1
34	M	D	B	4	BL3	DF4	1501	4
35	H	A	B	5	BL2	AF1	1502	1
36	M	A	A	2	AL1	AF5	1503	4
37	M	D	B	4	BL3	DF2	1503	1
38	M	A	A	2	AL1	AF1	1505	1
39	H	A	B	5	BL5	AF2	1505	3
40	M	D	B	4	BL1	DF1	1505	2
41	M	A	A	2	AL2	AF1	1506	1
42	M	D	A	1	AL4	DF5	1506	4
43	H	A	A	2	AL5	AF1	1507	1
44	H	A	B	5	BL3	AF2	1507	3
45	H	D	B	4	BL3	DF2	1508	1
46	M	D	A	1	AL3	DF4	1508	4
47	M	A	B	5	BL5	AF1	1509	1
48	H	D	A	1	AL6	DF5	1510	4
49	M	D	B	4	BL4	DF4	1510	4
50	M	A	A	2	AL3	AF1	1511	1
51	H	D	A	1	AL1	DF6	1513	2
52	H	D	A	3	AL4	DF6	1514	2
53	M	A	A	3	AL2	AF4	1515	4
54	M	A	B	5	BL5	AF2	1515	3
55	M	D	B	4	BL3	DF1	1516	2
56	H	A	B	5	BL1	AF1	1517	1
57	M	D	B	4	BL3	DF1	1517	2
58	M	D	A	3	AL1	DF5	1518	4
59	M	D	A	3	AL3	DF2	1519	1
60	H	A	A	2	AL5	AF2	1520	3
61	M	D	B	4	BL4	DF1	1521	2
62	M	D	A	1	AL4	DF1	1522	2
63	M	A	A	2	AL2	AF4	1523	4
64	H	D	B	4	BL5	DF1	1523	2
65	M	D	A	1	AL3	DF1	1523	2
66	M	A	A	2	AL5	AF1	1524	1
67	M	D	A	3	AL4	DF2	1524	1
68	M	A	B	5	BL5	AF1	1527	1
69	H	A	A	2	AL2	AF2	1528	3

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70	M	A	A	2	AL3	AF2	1529	3
71	H	A	B	5	BL4	AF2	1529	3
72	H	D	A	3	AL1	DF5	1530	4
73	M	D	A	3	AL4	DF6	1531	2
74	H	A	A	3	AL5	AF1	1532	1
75	M	A	B	5	BL3	AF1	1532	1
76	H	D	B	4	BL3	DF1	1532	2
77	M	D	A	1	AL4	DF1	1532	2
78	M	D	B	4	BL2	DF1	1534	2
79	H	D	A	1	AL3	DF3	1534	4
80	M	A	A	2	AL3	AF2	1535	3
81	M	D	A	1	AL4	DF1	1535	2
82	M	A	B	5	BL1	AF1	1537	1
83	M	A	B	5	BL4	AF1	1538	1
84	M	D	B	4	BL5	DF1	1538	2
85	M	A	A	3	AL6	AF1	1539	1
86	M	A	B	5	BL1	AF1	1540	1
87	M	D	B	4	BL3	DF4	1540	4
88	M	A	A	2	AL1	AF2	1541	3
89	M	A	B	5	BL3	AF2	1541	3
90	H	D	B	4	BL3	DF1	1541	2
91	H	A	A	2	AL2	AF4	1542	4
92	M	D	B	4	BL4	DF1	1543	2
93	M	A	A	3	AL2	AF5	1546	4
94	M	A	A	2	AL4	AF4	1547	4
95	M	A	A	2	AL6	AF2	1549	3
96	H	D	A	1	AL4	DF1	1549	2
97	M	D	B	4	BL5	DF3	1549	4
98	H	D	A	1	AL4	DF1	1550	2
99	H	D	B	4	BL3	DF3	1550	4
100	M	D	A	1	AL1	DF1	1551	2
101	H	A	B	5	BL3	AF1	1552	1
102	M	A	B	5	BL4	AF2	1552	3
103	H	D	B	4	BL1	DF1	1552	2
104	M	D	A	1	AL6	DF3	1552	4
105	H	A	A	3	AL6	AF5	1554	4
106	M	A	B	5	BL2	AF2	1554	3
107	H	D	B	4	BL4	DF3	1554	4
108	M	A	A	2	AL6	AF2	1555	3
109	H	A	B	5	BL1	AF2	1555	3
110	M	D	B	4	BL4	DF1	1555	2
111	H	D	A	1	AL5	DF2	1555	1
112	H	A	B	5	BL3	AF1	1556	1

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113	M	D	A	3	AL3	DF4	1556	4
114	M	A	A	3	AL1	AF4	1557	4
115	H	A	B	5	BL3	AF1	1557	1
116	M	D	B	4	BL1	DF4	1558	4
117	H	A	B	5	BL3	AF2	1559	3
118	M	D	A	1	AL2	DF2	1559	1
119	M	A	A	3	AL3	AF3	1600	3
120	M	A	B	5	BL4	AF2	1600	3
121	M	A	B	5	BL4	AF2	1601	3
122	H	D	A	3	AL6	DF6	1601	2
123	M	A	A	3	AL3	AF5	1602	4
124	M	D	A	3	AL4	DF1	1602	2
125	M	D	B	4	BL4	DF1	1603	2
126	M	A	B	5	BL3	AF2	1604	3
127	M	A	A	2	AL2	AF5	1605	4
128	H	A	B	5	BL3	AF1	1605	1
129	M	A	A	3	AL2	AF5	1607	4
130	M	D	A	1	AL4	DF5	1607	4
131	M	D	A	1	AL1	DF4	1607	4
132	M	A	A	3	AL2	AF1	1608	1
133	M	A	A	2	AL4	AF1	1608	1
134	H	D	A	3	AL5	DF5	1609	4
135	M	D	A	1	AL4	DF2	1609	1
136	M	A	A	3	AL2	AF1	1610	1
137	M	D	B	4	BL5	DF1	1610	2
138	M	A	A	2	AL6	AF5	1611	4
139	M	A	B	5	BL4	AF1	1611	1
140	M	D	B	4	BL5	DF1	1611	2
141	M	D	A	3	AL1	DF3	1611	4
142	H	D	B	4	BL5	DF3	1612	4
143	H	A	A	3	AL2	AF1	1613	1
144	M	A	A	2	AL1	AF1	1615	1
145	M	A	A	2	AL4	AF4	1615	4
146	M	A	B	5	BL5	AF1	1615	1
147	H	A	B	5	BL2	AF1	1615	1
148	H	A	A	3	AL6	AF3	1615	3
149	H	D	B	4	BL1	DF2	1615	1
150	M	D	B	4	BL5	DF1	1617	2
151	M	A	B	5	BL4	AF2	1618	3
152	M	A	A	3	AL4	AF2	1619	3
153	M	D	A	1	AL3	DF1	1619	2
154	M	A	B	5	BL3	AF2	1620	3
155	M	D	A	1	AL1	DF5	1620	4

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156	M	D	B	4	BL4	DF4	1620	4
157	M	A	A	3	AL6	AF2	1621	3
158	M	D	B	4	BL5	DF3	1621	4
159	H	D	B	4	BL1	DF1	1622	2
160	M	A	A	3	AL3	AF5	1623	4
161	H	A	A	2	AL2	AF2	1623	3
162	M	D	A	1	AL1	DF6	1623	2
163	M	A	A	3	AL1	AF4	1624	4
164	M	D	A	1	AL1	DF1	1624	2
165	H	D	B	4	BL5	DF1	1625	2
166	M	D	A	1	AL2	DF2	1625	1
167	M	A	B	5	BL3	AF1	1627	1
168	M	D	B	4	BL3	DF2	1627	1
169	M	D	A	1	AL2	DF1	1627	2
170	M	A	B	5	BL5	AF1	1628	1
171	H	A	A	2	AL1	AF4	1628	4
172	M	D	B	4	BL1	DF4	1629	4
173	M	A	B	5	BL5	AF5	1630	4
174	M	D	B	4	BL5	DF3	1630	4
175	M	D	A	1	AL3	DF1	1631	2
176	M	A	B	5	BL5	AF2	1632	3
177	M	D	A	3	AL4	DF6	1632	2
178	M	A	A	2	AL1	AF2	1633	3
179	H	A	A	2	AL4	AF4	1633	4
180	M	D	B	4	BL5	DF3	1633	4
181	H	A	A	2	AL3	AF5	1634	4
182	M	D	A	1	AL4	DF1	1634	2
183	M	D	B	4	BL4	DF1	1635	2
184	M	A	A	3	AL5	AF2	1637	3
185	M	A	A	3	AL1	AF2	1638	3
186	H	D	A	3	AL6	DF5	1638	4
187	H	A	A	2	AL2	AF5	1339	4
188	H	A	B	5	BL5	AF1	1639	1
189	M	D	A	3	AL3	DF5	1639	4
190	M	A	A	2	AL4	AF3	1640	3
191	M	D	A	1	AL3	DF2	1641	1
192	M	D	B	4	BL4	DF3	1642	4
193	H	A	B	5	BL3	AF2	1642	3
194	M	D	A	3	AL3	DF6	1643	2
195	M	A	A	3	AL3	AF1	1644	1
196	M	A	A	3	AL1	AF1	1644	1
197	H	D	B	4	BL2	DF3	1644	4
198	M	D	A	1	AL3	DF1	1645	2

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199	M	A	B	5	BL5	AF2	1646	3
200	M	D	A	3	AL6	DF6	1646	2
201	M	D	B	4	BL5	DF1	1646	2
202	M	A	A	3	AL4	AF1	1648	1
203	M	A	A	3	AL1	AF1	1649	1
204	H	A	A	3	AL5	AF1	1649	1
205	M	A	B	5	BL3	AF2	1649	3
206	H	D	A	3	AL3	DF6	1649	2
207	M	A	A	2	AL4	AF5	1650	4
208	M	D	A	3	AL2	DF5	1650	4
209	M	D	B	4	BL1	DF4	1650	4
210	M	D	A	1	AL3	DF1	1656	2
211	H	D	B	4	BL2	DF4	1656	4
212	H	A	A	2	AL2	AF3	1657	3
213	H	D	A	1	AL1	DF2	1657	1
214	M	A	B	5	BL4	AF2	1658	3
215	M	A	B	5	BL4	AF1	1659	1

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