Appendix

Heat released based analysis for oil accumulation and first fire readiness for cylinder 2 following 10 minutes of deactivation is shown in Figures 1(a) and 2(a).

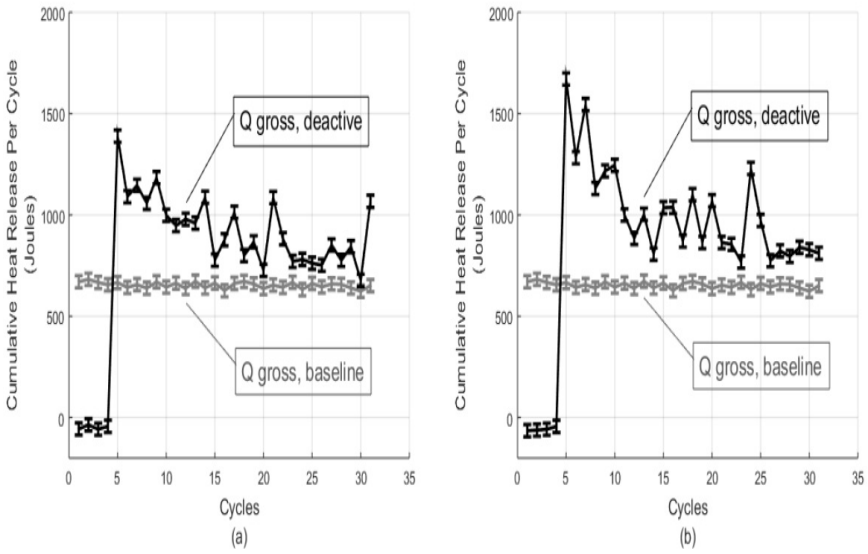

Figure 1: (a) Cumulative heat release per cycle for cylinder 2 after 10 minutes of deactivation in data set 1 at 800 rpm, 100 ft-lb.
(b) Cumulative heat release per cycle for cylinder 2 after 20 minutes of deactivation in data set 1 at 800 rpm, 100 ft-lb.

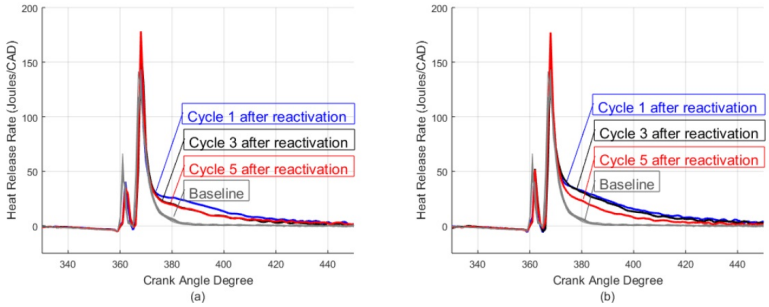

Figure 2: (a) Heat release rate for cylinder 2 after 10 minutes of deactivation in data set 1 at 800 rpm, 100 ft-lb.
(b) Heat release rate for cylinder 2 after 20 minutes of deactivation in data set 1 at 800 rpm, 100 ft-lb.

Heat released based analysis for oil accumulation and first fire readiness for cylin-

der 2 following 20 minutes of deactivation is shown in Figures 1(b) and 2(b).

Calculated oil mass of accumulated oil during CDA for all cylinders at different operating conditions is shown in Tables 2 through 5.

Table 1: Calculated mass of oil accumulated during CDA at 800 rpm, 100 ft-lb, data set 1.

CDA Time (min)	Deactivated Cylinders	Cyl. 1 Oil Mass (mg)	Cyl. 2 Oil Mass (mg)	Cyl. 3 Oil Mass (mg)	Cyl. 4 Oil Mass (mg)	Cyl. 5 Oil Mass (mg)	Cyl. 6 Oil Mass (mg)
20	1, 2, 3	71.65	243.65	96.93	-	-	-
20	4, 5, 6	-	-	-	132.22	34.68	16.89
10	1, 2, 3	18.29	175.41	8.53	-	-	-
10	4, 5, 6	-	-	-	77.98	6.26	22.89
5	1, 2, 3	1.825	108.41	0	-	-	-
5	4, 5, 6	-	-	-	70.68	25.88	30.66
0.5	1, 2, 3	0	0	0	-	-	-
0.5	4, 5, 6	-	-	-	0	0	0

Table 2: Calculated mass of oil accumulated during CDA at 800 rpm, 100 ft-lb, data set 2.

CDA Time (min)	Deactivated Cylinders	Cyl. 1 Oil Mass (mg)	Cyl. 2 Oil Mass (mg)	Cyl. 3 Oil Mass (mg)	Cyl. 4 Oil Mass (mg)	Cyl. 5 Oil Mass (mg)	Cyl. 6 Oil Mass (mg)
20	1, 2, 3	73.05	487.77	52.51	-	-	-
20	4, 5, 6	-	-	-	125.37	154.50	145.02
10	1, 2, 3	17.93	280.63	22.14	-	-	-
10	4, 5, 6	-	-	-	79.72	45.18	57.09
5	1, 2, 3	0	116.04	2.60	-	-	-
5	4, 5, 6	-	-	-	9.69	1.63	0
0.5	1, 2, 3	0	0	0	-	-	-
0.5	4, 5, 6	-	-	-	0	0	0

Table 3: Calculated mass of oil accumulated during CDA at 1200 rpm, 100 ft-lb, data set 1.

CDA Time (min)	Deactivated Cylinders	Cyl. 1 Oil Mass (mg)	Cyl. 2 Oil Mass (mg)	Cyl. 3 Oil Mass (mg)	Cyl. 4 Oil Mass (mg)	Cyl. 5 Oil Mass (mg)	Cyl. 6 Oil Mass (mg)
20	1, 2, 3	39.14	2.07	57.22	-	-	-
20	4, 5, 6	-	-	-	0	31.86	7.72
10	1, 2, 3	0	8.06	0	-	-	-
10	4, 5, 6	-	-	-	0	0	17.26
5	1, 2, 3	1.01	0	1.65	-	-	-
5	4, 5, 6	-	-	-	0	0	0
0.5	1, 2, 3	0	0	0	-	-	-
0.5	4, 5, 6	-	-	-	0	0	0

Table 4: Calculated mass of oil accumulated during CDA at 1200 rpm, 100 ft-lb, data set 2.

CDA Time (min)	Deactivated Cylinders	Cyl. 1 Oil Mass (mg)	Cyl. 2 Oil Mass (mg)	Cyl. 3 Oil Mass (mg)	Cyl. 4 Oil Mass (mg)	Cyl. 5 Oil Mass (mg)	Cyl. 6 Oil Mass (mg)
20	1, 2, 3	4.91	1.24	7.70	-	-	-
20	4, 5, 6	-	-	-	1.37	0	23.17
10	1, 2, 3	5.18	14.99	7.13	-	-	-
10	4, 5, 6	-	-	-	0	0	3.92
5	1, 2, 3	0	0	0	-	-	-
5	4, 5, 6	-	-	-	0	9.59	3.87
0.5	1, 2, 3	0	0	0	-	-	-
0.5	4, 5, 6	-	-	-	0	0	0