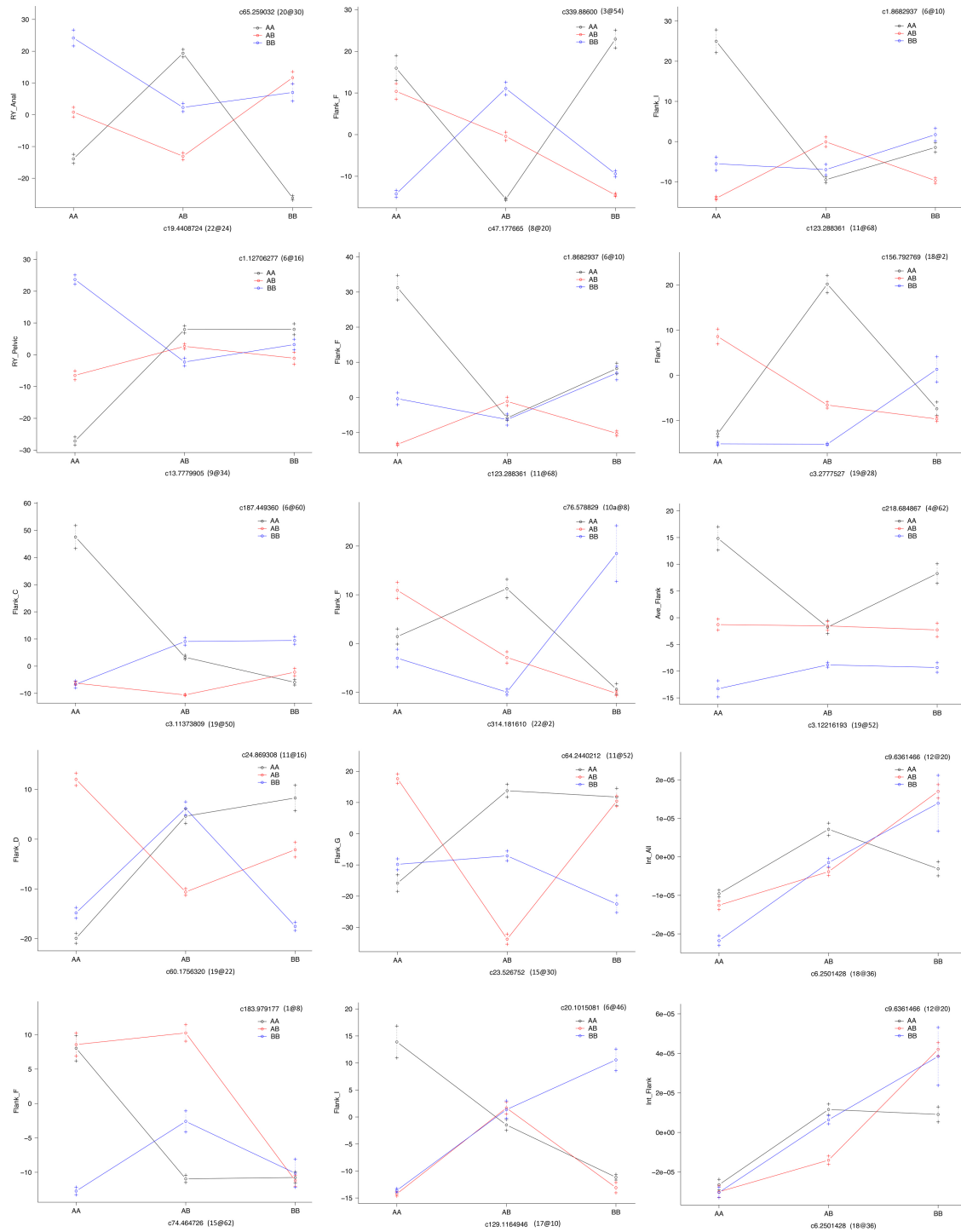
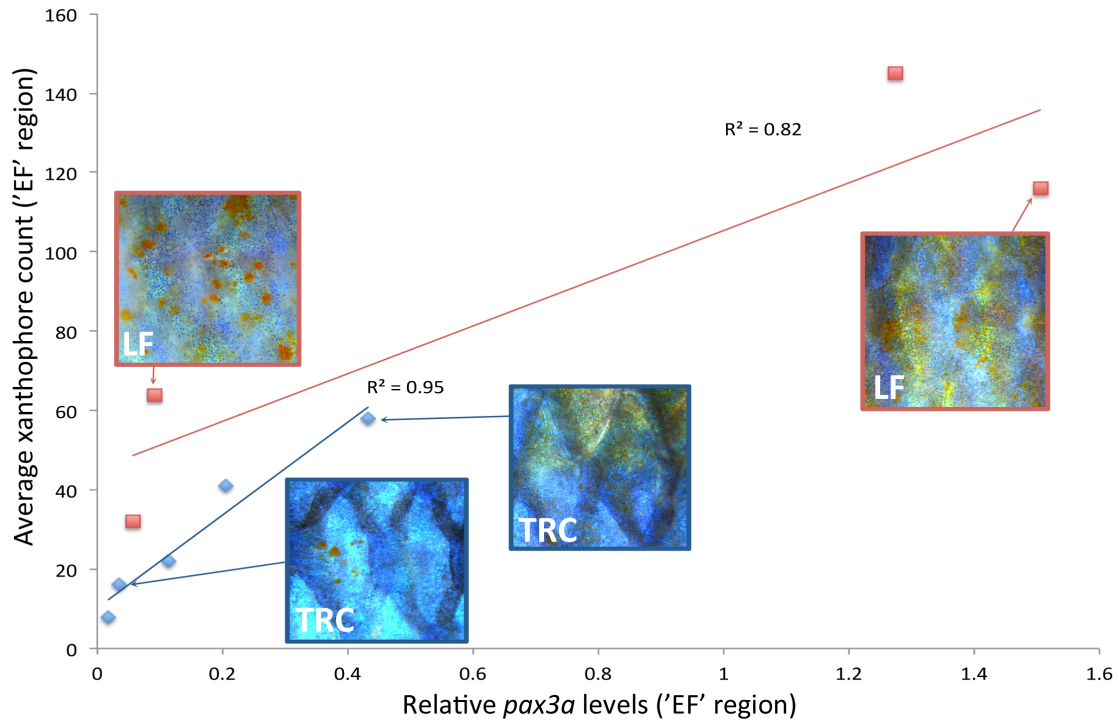


# Supplemental Material



**Figure S1.** Effect plots from all significant (i.e., 0.05 genome-wide level) two-way interactions are shown. Trait values are recorded on the y-axis and genotypes are

on the x-axis. In all instances, the AA genotype refers to LF/LF, whereas the BB genotype is TRC/TRC. The AB genotype is LF/TRC. Marker names refer to both the genome scaffold, and nucleotide position of the marker (from the MZv.0 assembly). For example, c13.7779905 refers to a SNP on scaffold 13 at 7,779,905Mbs. In addition the linkage group and map position is shown with each marker (e.g., 9@34 = LG9, 34cM).



**Figure S2.** A positive association is noted between relative *pax3a* transcript levels and xanthophore count in both LF and TRC. Xanthophore number was counted under a stereomicroscope, and averaged from 5 scales within the 'E-F' flank region for several lab-reared LF and TRC males. Variation in xanthophore number was observed for both species, and was extensive for LF. In both species, average xanthophore count was associated with relative *pax3a* transcript levels, measured by quantitative PCR.

Table S1. Various measures of genetic differentiation across SNPs derived from genotyping twenty wild caught LF and twenty wild caught TRC. All markers listed below have  $F_{st}$  values equal to or greater than 0.58.

Marker (scaffold.bp)	$F_{st}$	$F_{stp}$	$F_{is}$	$D_{est}$
mkr0.11488535	1	1	NaN	1
mkr0.12844052	1	1	NaN	1
mkr0.1325166	1	1	NaN	1
mkr0.1325183	1	1	NaN	1
mkr0.13419971	0.8503	0.9191	-0.0595	0.9147
mkr0.14258868	0.9474	0.973	-0.0007	0.973
mkr0.14258907	0.9474	0.973	-0.0007	0.973
mkr0.14345619	1	1	NaN	1
mkr0.14967006	0.892	0.9429	0	0.9444
mkr0.14971946	0.9445	0.9715	-0.0015	0.9714
mkr0.15218636	0.8976	0.946	-0.0293	0.9445
mkr0.15862604	1	1	NaN	1
mkr0.16064563	0.8859	0.9395	-0.0331	0.9376
mkr0.16149180	1	1	NaN	1
mkr0.16222976	0.9474	0.973	-0.0007	0.973
mkr0.16556270	1	1	NaN	1
mkr0.17182901	1	1	NaN	1
mkr0.17457805	0.8573	0.9232	-0.0556	0.9193
mkr0.17575903	0.9236	0.9603	-0.0065	0.96
mkr0.18158657	1	1	NaN	1
mkr0.18725296	1	1	NaN	1
mkr0.1988457	NaN	NaN	NaN	NaN
mkr0.2582514	0.9472	0.9729	0.0026	0.973
mkr0.2639114	1	1	NaN	1
mkr0.3426417	1	1	NaN	1
mkr0.358525	0.8573	0.9232	-0.0556	0.9193
mkr0.3785116	1	1	NaN	1
mkr0.5071706	0.95	0.9744	0	0.9744
mkr0.6157670	0.9025	0.9488	-0.027	0.9474
mkr0.6854671	0.8473	0.9174	0.6543	0.9145
mkr0.6854782	1	1	NaN	1
mkr0.7061265	1	1	NaN	1
mkr0.8829323	1	1	NaN	1
mkr0.8989175	0.9474	0.973	0	0.973
mkr1.12449379	1	1	NaN	1
mkr1.12617600	0.95	0.9743	0.0007	0.9744
mkr1.13260711	1	1	NaN	1
mkr1.13554615	1	1	NaN	1

mkr1.13592357	1	1	NaN	1
mkr1.13639607	0.8573	0.9232	-0.0556	0.9193
mkr1.1395687	1	1	NaN	1
mkr1.14802276	1	1	NaN	1
mkr1.15055852	0.7953	0.886	-0.0425	0.886
mkr1.1573715	0.95	0.9744	0	0.9744
mkr1.229937	0.95	0.9744	0	0.9744
mkr1.2711087	0.95	0.9744	0	0.9744
mkr1.3052167	1	1	NaN	1
mkr1.3066840	0.95	0.9744	0	0.9744
mkr1.3067114	0.9377	0.9678	-0.0033	0.9677
mkr1.3208255	0.95	0.9744	0	0.9744
mkr1.337776	1	1	NaN	1
mkr1.337781	1	1	NaN	1
mkr1.3415840	1	1	NaN	1
mkr1.3674355	0.9445	0.9715	-0.0008	0.9714
mkr1.3674373	1	1	NaN	1
mkr1.373004	1	1	NaN	1
mkr1.3834267	1	1	NaN	1
mkr1.4667697	0.7484	0.8561	0.3276	0.8415
mkr1.5000315	1	1	NaN	1
mkr1.5000447	0.95	0.9744	0	0.9744
mkr1.5258772	1	1	NaN	1
mkr1.6031297	1	1	NaN	1
mkr1.756157	0.95	0.9744	0	0.9744
mkr1.797167	0.8976	0.946	-0.0293	0.9445
mkr1.8682937	0.95	0.9743	0.0007	0.9744
mkr1.9086673	1	1	NaN	1
mkr1.9188212	0.9474	0.973	-0.0007	0.973
mkr1.9514500	1	1	NaN	1
mkr10.1069886	0.6834	0.8119	-0.2007	0.7824
mkr10.2088328	1	1	NaN	1
mkr10.2344075	1	1	NaN	1
mkr10.2642987	0.7275	0.8422	-0.0525	0.8448
mkr10.2678665	0.8475	0.9175	0.6538	0.9146
mkr10.3618008	0.6271	0.7708	-0.2667	0.7264
mkr10.3750117	0.9024	0.9487	-0.0263	0.9474
mkr10.3750236	1	1	NaN	1
mkr10.3799509	0.9025	0.9488	-0.027	0.9474
mkr10.4181606	1	1	NaN	1
mkr10.6615687	0.7815	0.8774	0.4563	0.8681
mkr10.6884138	0.8015	0.8898	-0.089	0.8812

mkr10.703320	0.9025	0.9488	-0.027	0.9474
mkr10.8226518	0.8503	0.9191	-0.0595	0.9147
mkr10.8317121	1	1	NaN	1
mkr10.8372011	1	1	NaN	1
mkr10.8461747	0.8479	0.9177	-0.0194	0.9188
mkr10.8577966	0.6105	0.7582	-0.2833	0.7096
mkr10.8688970	0.8974	0.9459	-0.0278	0.9445
mkr10.8956479	1	1	NaN	1
mkr10.9464492	1	1	NaN	1
mkr100.1554397	0.8528	0.9206	-0.0179	0.9217
mkr100.563038	0.9025	0.9488	-0.027	0.9474
mkr101.1142418	1	1	NaN	1
mkr101.1218462	0.9474	0.973	0	0.973
mkr101.1218548	0.9474	0.973	-0.0007	0.973
mkr101.1308428	1	1	NaN	1
mkr101.1853558	1	1	NaN	1
mkr101.2002976	1	1	NaN	1
mkr101.2318917	0.892	0.9429	-0.0303	0.9413
mkr101.2583528	0.95	0.9743	0.0007	0.9744
mkr102.105429	1	1	NaN	1
mkr102.105497	1	1	NaN	1
mkr102.1157010	1	1	NaN	1
mkr102.1562998	1	1	NaN	1
mkr102.1887828	0.9025	0.9488	-0.027	0.9474
mkr102.1942689	0.6113	0.7587	-0.2864	0.7097
mkr102.1980144	0.9024	0.9487	-0.0263	0.9474
mkr102.2092170	1	1	NaN	1
mkr102.2179904	1	1	NaN	1
mkr102.246486	1	1	NaN	1
mkr102.859476	0.95	0.9744	0	0.9744
mkr102.979529	1	1	NaN	1
mkr103.1012007	1	1	NaN	1
mkr103.1033445	1	1	NaN	1
mkr103.1083538	1	1	NaN	1
mkr103.119969	1	1	NaN	1
mkr103.1440300	0.9025	0.9488	-0.027	0.9474
mkr103.1580105	1	1	NaN	1
mkr103.2073852	1	1	NaN	1
mkr103.2307980	0.95	0.9744	0	0.9744
mkr103.304062	0.7627	0.8654	-0.1257	0.851
mkr103.312831	1	1	NaN	1
mkr103.397897	1	1	NaN	1

mkr103.427188	1	1	NaN	1
mkr103.47424	0.95	0.9744	0	0.9744
mkr103.47438	1	1	NaN	1
mkr103.514288	0.6129	0.76	-0.2822	0.7118
mkr103.621702	1	1	NaN	1
mkr103.644855	1	1	NaN	1
mkr103.768628	1	1	NaN	1
mkr103.903069	0.95	0.9743	0.0007	0.9744
mkr103.950342	1	1	NaN	1
mkr105.1362742	0.6113	0.7587	-0.2864	0.7097
mkr105.1636303	1	1	NaN	1
mkr105.2141154	0.6657	0.7993	0.2881	0.7705
mkr105.2327575	1	1	NaN	1
mkr105.283835	0.9024	0.9487	-0.0263	0.9474
mkr106.1012963	0.7088	0.8296	-0.1738	0.8058
mkr106.1399010	1	1	NaN	1
mkr106.1585378	0.9474	0.973	0	0.973
mkr106.1660566	0.6441	0.7835	0.0762	0.7461
mkr106.1694946	1	1	NaN	1
mkr106.1780131	0.8368	0.9112	-0.02	0.9126
mkr106.1804476	0.9474	0.973	-0.0007	0.973
mkr106.1809812	0.8861	0.9396	-0.0346	0.9376
mkr106.1955076	1	1	NaN	1
mkr106.195850	0.9474	0.973	-0.0007	0.973
mkr106.196115	0.8921	0.943	-0.0318	0.9413
mkr106.2001338	0.9024	0.9487	-0.0263	0.9474
mkr106.2022136	0.5979	0.7483	-0.1203	0.7455
mkr106.2056114	1	1	NaN	1
mkr106.2225648	0.9445	0.9715	-0.0008	0.9714
mkr106.2285191	0.7241	0.84	-0.1571	0.8194
mkr106.641794	0.9445	0.9715	-0.0015	0.9714
mkr106.654872	0.9474	0.973	-0.0007	0.973
mkr106.718178	0.9474	0.973	-0.0007	0.973
mkr106.732910	1	1	NaN	1
mkr106.732973	1	1	NaN	1
mkr106.765308	0.9444	0.9714	0	0.9714
mkr106.889318	0.7241	0.84	-0.1571	0.8194
mkr106.902824	0.8573	0.9232	-0.0556	0.9193
mkr106.958209	0.9474	0.973	0	0.973
mkr106.960449	0.6809	0.8102	0.1503	0.782
mkr106.979373	1	1	NaN	1
mkr107.63323	1	1	NaN	1

mkr108.1174693	1	1	NaN	1
mkr108.1174858	1	1	NaN	1
mkr108.1513665	1	1	NaN	1
mkr109.1542895	0.9499	0.9743	0.0023	0.9744
mkr109.1927103	0.6496	0.7876	0.1281	0.7523
mkr109.2129748	1	1	NaN	1
mkr109.2314746	0.95	0.9744	0	0.9744
mkr11.1820591	1	1	NaN	1
mkr11.1840866	0.9474	0.973	-0.0007	0.973
mkr11.1840908	1	1	NaN	1
mkr11.1860811	0.6064	0.755	0.2962	0.7087
mkr11.2274731	0.8858	0.9395	-0.0323	0.9376
mkr11.4017683	0.9499	0.9743	0.0015	0.9744
mkr11.4108123	0.6271	0.7708	-0.2667	0.7264
mkr11.4202504	0.7342	0.8467	-0.1515	0.8275
mkr11.4329962	0.6524	0.7896	-0.2323	0.7528
mkr11.4650925	1	1	NaN	1
mkr11.4651005	1	1	NaN	1
mkr11.4931156	0.8861	0.9396	-0.0346	0.9376
mkr11.5929334	0.8119	0.8962	0.4648	0.8897
mkr11.8641264	0.892	0.9429	0	0.9444
mkr110.1413215	0.9499	0.9743	0.0015	0.9744
mkr110.1483181	0.9445	0.9715	-0.0008	0.9714
mkr110.1751283	0.8976	0.946	-0.0293	0.9445
mkr110.1751318	0.6834	0.8119	-0.2007	0.7824
mkr110.1964434	1	1	NaN	1
mkr111.1014607	1	1	NaN	1
mkr111.1183548	0.8887	0.9411	-0.0001	0.9426
mkr111.1265773	1	1	NaN	1
mkr111.1396077	1	1	NaN	1
mkr111.1446492	1	1	NaN	1
mkr111.1714442	1	1	NaN	1
mkr111.2183230	1	1	NaN	1
mkr111.276283	1	1	NaN	1
mkr111.475213	1	1	NaN	1
mkr111.673317	1	1	NaN	1
mkr111.723082	1	1	NaN	1
mkr111.841535	0.95	0.9744	0	0.9744
mkr112.508784	0.9474	0.973	0	0.973
mkr113.1027945	1	1	NaN	1
mkr113.1078023	1	1	NaN	1
mkr113.1078069	1	1	NaN	1



mkr113.1250823	1	1	NaN	1
mkr113.1256930	0.6834	0.8119	-0.2007	0.7824
mkr113.1710021	0.7627	0.8654	-0.1257	0.851
mkr113.191603	1	1	NaN	1
mkr113.1923758	0.6658	0.7994	0.1407	0.7681
mkr113.2248030	0.6781	0.8082	-0.2032	0.7779
mkr113.2250349	1	1	NaN	1
mkr113.344498	1	1	NaN	1
mkr113.864422	1	1	NaN	1
mkr114.1040362	0.95	0.9743	0.0007	0.9744
mkr114.1602092	1	1	NaN	1
mkr114.2156074	1	1	NaN	1
mkr114.2162755	1	1	NaN	1
mkr114.2162757	1	1	NaN	1
mkr114.2180055	1	1	NaN	1
mkr114.2315433	0.6305	0.7734	-0.2606	0.7302
mkr114.2353327	1	1	NaN	1
mkr114.2355218	1	1	NaN	1
mkr114.274720	1	1	NaN	1
mkr114.274778	1	1	NaN	1
mkr114.317960	1	1	NaN	1
mkr114.699648	0.9473	0.973	0.0008	0.973
mkr114.782134	1	1	NaN	1
mkr115.1654379	1	1	NaN	1
mkr115.1697367	0.6088	0.7569	0.0072	0.7092
mkr115.1767806	0.95	0.9743	0.0007	0.9744
mkr115.291751	0.8528	0.9206	-0.0179	0.9217
mkr115.713052	1	1	NaN	1
mkr115.904749	0.8339	0.9094	-0.0683	0.9038
mkr116.1492109	1	1	NaN	1
mkr116.1591708	0.8976	0.946	-0.0293	0.9445
mkr116.1735680	0.95	0.9744	0	0.9744
mkr116.185362	0.9499	0.9743	0.0015	0.9744
mkr116.2029862	1	1	NaN	1
mkr116.2264444	1	1	NaN	1
mkr116.516609	1	1	NaN	1
mkr117.1144138	1	1	NaN	1
mkr117.1144154	1	1	NaN	1
mkr117.1192545	1	1	NaN	1
mkr117.1972066	1	1	NaN	1
mkr117.377011	0.9474	0.973	-0.0007	0.973
mkr1173.4775	0.8454	0.9162	-0.0035	0.9187

mkr118.2170572	1	1	NaN	1
mkr118.2192593	0.6969	0.8214	-0.1875	0.7948
mkr118.480015	0.95	0.9744	0	0.9744
mkr118.648598	0.8054	0.8922	-0.0916	0.8835
mkr118.686706	0.8573	0.9232	-0.0556	0.9193
mkr118.848647	0.8053	0.8922	-0.0909	0.8835
mkr1182.102	1	1	NaN	1
mkr1182.130	0.95	0.9744	0	0.9744
mkr119.1566939	0.95	0.9743	0.0007	0.9744
mkr119.1592583	0.9413	0.9698	-0.0023	0.9697
mkr119.206524	0.95	0.9744	0	0.9744
mkr119.551740	0.6321	0.7745	0.5968	0.7396
mkr12.1169539	1	1	NaN	1
mkr12.2224616	0.7059	0.8276	0.2265	0.8054
mkr12.2435698	1	1	NaN	1
mkr12.3075415	0.6807	0.81	0.1509	0.782
mkr12.4308460	0.5941	0.7454	-0.309	0.691
mkr12.4350566	0.8054	0.8922	-0.0916	0.8835
mkr12.4461222	1	1	NaN	1
mkr12.4470559	1	1	NaN	1
mkr12.4908925	0.5933	0.7448	-0.306	0.6908
mkr12.5744852	1	1	NaN	1
mkr12.6022370	0.95	0.9744	0	0.9744
mkr12.6050047	0.6607	0.7957	-0.2236	0.7609
mkr12.7181313	0.95	0.9743	0.0007	0.9744
mkr12.8352875	1	1	NaN	1
mkr120.1059008	0.6525	0.7897	-0.233	0.7528
mkr120.1429551	0.6305	0.7734	-0.2606	0.7302
mkr120.1557130	0.6525	0.7897	-0.233	0.7528
mkr120.1764231	1	1	NaN	1
mkr120.2095492	1	1	NaN	1
mkr120.324755	0.6305	0.7734	-0.2606	0.7302
mkr120.341231	1	1	NaN	1
mkr120.53063	1	1	NaN	1
mkr120.854943	0.7381	0.8493	-0.1445	0.8313
mkr121.1349034	1	1	NaN	1
mkr121.1981945	0.95	0.9744	0	0.9744
mkr121.240226	0.6856	0.8135	-0.1271	0.8017
mkr121.761156	1	1	NaN	1
mkr121.761167	1	1	NaN	1
mkr122.1805593	1	1	NaN	1
mkr122.2064576	1	1	NaN	1

mkr123.1212281	0.6496	0.7876	0.1281	0.7523
mkr123.1597303	1	1	NaN	1
mkr123.1597348	0.6101	0.7578	0.0472	0.7112
mkr123.1856500	0.5941	0.7454	-0.309	0.691
mkr123.1997625	0.6347	0.7766	-0.2531	0.735
mkr123.288361	1	1	NaN	1
mkr123.386848	0.5937	0.745	-0.3074	0.6909
mkr123.386970	0.5937	0.745	-0.3074	0.6909
mkr124.1667602	1	1	NaN	1
mkr125.1904299	0.9499	0.9743	0.0023	0.9744
mkr125.1904328	0.95	0.9743	0.0007	0.9744
mkr125.302576	0.8976	0.946	-0.0293	0.9445
mkr126.1108268	1	1	NaN	1
mkr126.1153679	1	1	NaN	1
mkr126.1195706	0.8975	0.946	0	0.9473
mkr126.1258056	1	1	NaN	1
mkr126.1829444	1	1	NaN	1
mkr126.216569	1	1	NaN	1
mkr127.2095058	0.8573	0.9232	-0.0556	0.9193
mkr127.494245	0.95	0.9743	0.0007	0.9744
mkr127.697653	1	1	NaN	1
mkr128.1538240	1	1	NaN	1
mkr128.1966516	1	1	NaN	1
mkr128.301811	1	1	NaN	1
mkr128.417935	1	1	NaN	1
mkr128.432352	1	1	NaN	1
mkr128.798952	0.95	0.9744	0	0.9744
mkr128.921623	0.9445	0.9715	-0.0015	0.9714
mkr129.1164946	0.95	0.9743	0.0007	0.9744
mkr129.1192566	0.6612	0.7961	-0.2258	0.761
mkr13.1193273	0.8028	0.8906	0.4621	0.8833
mkr13.1631145	0.9474	0.973	-0.0007	0.973
mkr13.2787548	0.6655	0.7992	0.1414	0.768
mkr13.3659624	0.7511	0.8579	-0.1348	0.8417
mkr13.3714129	1	1	NaN	1
mkr13.3985261	1	1	NaN	1
mkr13.4964453	0.9474	0.973	-0.0007	0.973
mkr13.5125047	0.8136	0.8972	-0.0813	0.8898
mkr13.5487880	1	1	NaN	1
mkr13.5636012	1	1	NaN	1
mkr13.6263758	0.7627	0.8654	-0.1257	0.851
mkr13.6386857	0.6399	0.7804	-0.1176	0.7747

mkr13.7779905	1	1	NaN	1
mkr13.8441477	1	1	NaN	1
mkr130.1262569	1	1	NaN	1
mkr130.918603	1	1	NaN	1
mkr1302.680	0.7147	0.8336	-0.0529	0.837
mkr131.1115228	1	1	NaN	1
mkr131.1659470	0.5854	0.7385	0.4538	0.689
mkr132.1920779	1	1	NaN	1
mkr132.306414	1	1	NaN	1
mkr132.312828	0.8426	0.9146	-0.064	0.9096
mkr132.348543	1	1	NaN	1
mkr132.627024	1	1	NaN	1
mkr132.954018	0.9474	0.973	-0.0007	0.973
mkr133.1214284	1	1	NaN	1
mkr133.1243437	0.6602	0.7954	-0.2216	0.7608
mkr133.1498314	1	1	NaN	1
mkr133.1517469	0.9474	0.973	-0.0007	0.973
mkr133.1650271	0.95	0.9743	0.0007	0.9744
mkr133.1691350	1	1	NaN	1
mkr133.810225	1	1	NaN	1
mkr133.911751	0.6524	0.7896	-0.2323	0.7528
mkr134.1321441	0.9377	0.9678	-0.0026	0.9677
mkr134.1691066	0.95	0.9744	0	0.9744
mkr134.181011	1	1	NaN	1
mkr134.1821046	0.6467	0.7855	0.4821	0.7518
mkr134.191722	1	1	NaN	1
mkr135.1559648	1	1	NaN	1
mkr135.179715	1	1	NaN	1
mkr135.1954878	1	1	NaN	1
mkr136.1466936	1	1	NaN	1
mkr136.317137	1	1	NaN	1
mkr137.1055183	1	1	NaN	1
mkr137.1666100	0.95	0.9744	0	0.9744
mkr137.522659	0.9025	0.9488	-0.027	0.9474
mkr137.735747	0.6834	0.8119	-0.2007	0.7824
mkr138.1146250	0.7625	0.8652	-0.1242	0.851
mkr138.1146252	0.7625	0.8652	-0.1242	0.851
mkr138.1158148	0.683	0.8116	-0.1256	0.8003
mkr138.1751258	1	1	NaN	1
mkr138.385861	0.666	0.7995	0.14	0.7681
mkr138.904867	0.6997	0.8233	-0.1102	0.8145
mkr139.1113473	0.6111	0.7586	-0.2857	0.7097

mkr139.1512030	1	1	NaN	1
mkr139.1512150	0.6321	0.7745	0.5968	0.7396
mkr139.541565	0.6687	0.8014	-0.2157	0.7685
mkr14.1232329	1	1	NaN	1
mkr14.1232448	1	1	NaN	1
mkr14.1412814	1	1	NaN	1
mkr14.1959611	0.6465	0.7853	-0.242	0.7465
mkr14.2340757	0.95	0.9744	0	0.9744
mkr14.2368660	1	1	NaN	1
mkr14.2608120	0.95	0.9744	0	0.9744
mkr14.2723817	0.7627	0.8654	-0.1257	0.851
mkr14.6883973	0.6458	0.7848	-0.2389	0.7464
mkr14.7646661	0.751	0.8578	-0.1341	0.8417
mkr140.1285494	1	1	NaN	1
mkr141.682262	0.8914	0.9426	-0.0002	0.944
mkr141.717827	1	1	NaN	1
mkr141.717891	1	1	NaN	1
mkr142.1407017	0.95	0.9743	0.0007	0.9744
mkr142.507333	0.9474	0.973	0	0.973
mkr143.1413477	1	1	NaN	1
mkr143.1548276	0.8976	0.946	-0.0293	0.9445
mkr144.1137020	0.95	0.9744	0	0.9744
mkr144.1593204	0.9472	0.9729	0.0026	0.973
mkr144.1622234	0.9445	0.9715	-0.0015	0.9714
mkr144.243483	1	1	NaN	1
mkr144.626463	1	1	NaN	1
mkr144.915570	0.8667	0.9286	1	0.9286
mkr144.991276	0.6133	0.7603	-0.1958	0.7352
mkr145.473490	0.8054	0.8922	-0.0916	0.8835
mkr146.88596	0.6178	0.7638	-0.2699	0.718
mkr148.1119969	1	1	NaN	1
mkr148.1136272	0.95	0.9743	0.0007	0.9744
mkr148.213738	1	1	NaN	1
mkr148.288787	1	1	NaN	1
mkr149.1197825	0.95	0.9743	0.0007	0.9744
mkr149.1204263	0.95	0.9744	0	0.9744
mkr149.1443155	1	1	NaN	1
mkr149.641793	0.9474	0.973	-0.0007	0.973
mkr149.749122	1	1	NaN	1
mkr149.777150	1	1	NaN	1
mkr149.930917	0.8976	0.946	-0.0293	0.9445
mkr15.1523105	0.8549	0.9218	0.6545	0.9191

mkr15.1523178	1	1	NaN	1
mkr15.1790988	0.9474	0.973	-0.0007	0.973
mkr15.2030138	1	1	NaN	1
mkr15.2030146	1	1	NaN	1
mkr15.2509619	1	1	NaN	1
mkr15.2515403	0.7239	0.8399	-0.1564	0.8193
mkr15.2536144	0.6969	0.8214	-0.1875	0.7948
mkr15.3394172	0.7926	0.8843	0.4597	0.8762
mkr15.3605310	1	1	NaN	1
mkr15.4347678	0.6969	0.8214	-0.1875	0.7948
mkr15.4349882	0.9474	0.973	0	0.973
mkr15.5390570	0.7061	0.8278	0.2259	0.8054
mkr15.6534150	0.95	0.9743	0.0007	0.9744
mkr15.6534248	0.95	0.9744	0	0.9744
mkr15.6765731	0.8426	0.9146	-0.064	0.9096
mkr15.6910019	1	1	NaN	1
mkr15.7292725	1	1	NaN	1
mkr15.7408194	0.7244	0.8402	-0.0962	0.8335
mkr15.7751170	1	1	NaN	1
mkr150.1455638	1	1	NaN	1
mkr150.62569	1	1	NaN	1
mkr1504.1884	1	1	NaN	1
mkr151.1108446	1	1	NaN	1
mkr151.1372725	0.8921	0.9429	-0.0311	0.9413
mkr151.1461990	0.8716	0.9314	-0.0415	0.9288
mkr151.1676036	0.95	0.9743	0.0007	0.9744
mkr151.828829	0.8502	0.919	-0.0173	0.9203
mkr151.932942	0.9474	0.973	-0.0007	0.973
mkr152.1457730	0.7244	0.8402	-0.0962	0.8335
mkr152.1457734	0.7732	0.8721	-0.117	0.8592
mkr152.149395	1	1	NaN	1
mkr152.263656	1	1	NaN	1
mkr152.322123	1	1	NaN	1
mkr152.965466	1	1	NaN	1
mkr153.102606	0.684	0.8123	-0.118	0.8024
mkr153.199022	1	1	NaN	1
mkr153.328823	0.95	0.9744	0	0.9744
mkr153.383313	0.9001	0.9474	0	0.9487
mkr153.492544	0.722	0.8385	-0.1613	0.8173
mkr153.856555	1	1	NaN	1
mkr153.927391	1	1	NaN	1
mkr154.1486002	1	1	NaN	1

mkr154.63018	1	1	NaN	1
mkr155.1372172	1	1	NaN	1
mkr155.1520985	1	1	NaN	1
mkr155.294078	1	1	NaN	1
mkr155.834309	0.6567	0.7928	0.1957	0.7603
mkr155.834312	0.7082	0.8292	-0.171	0.8057
mkr156.1614803	0.5917	0.7435	0.6095	0.7192
mkr156.424817	1	1	NaN	1
mkr156.525366	0.95	0.9743	0.0007	0.9744
mkr156.792769	1	1	NaN	1
mkr156.832127	1	1	NaN	1
mkr156.834315	0.8143	0.8977	-0.0857	0.8899
mkr157.1213716	1	1	NaN	1
mkr157.316126	1	1	NaN	1
mkr157.316235	1	1	NaN	1
mkr157.574609	0.6353	0.7769	-0.1724	0.7566
mkr157.580939	1	1	NaN	1
mkr157.586784	0.8858	0.9394	0	0.9411
mkr158.1131427	0.8976	0.946	-0.0293	0.9445
mkr158.1158719	0.834	0.9095	-0.069	0.9038
mkr158.1254210	1	1	NaN	1
mkr158.1294688	1	1	NaN	1
mkr158.1371642	0.6809	0.8102	0.1503	0.782
mkr158.235316	1	1	NaN	1
mkr158.620001	1	1	NaN	1
mkr159.550691	0.95	0.9744	0	0.9744
mkr159.550743	0.95	0.9744	0	0.9744
mkr159.550755	0.95	0.9744	0	0.9744
mkr159.654801	1	1	NaN	1
mkr159.85245	1	1	NaN	1
mkr159.924592	0.8528	0.9206	-0.0179	0.9217
mkr16.1217679	1	1	NaN	1
mkr16.1845283	1	1	NaN	1
mkr16.1886033	1	1	NaN	1
mkr16.1906385	0.6658	0.7994	0.1407	0.7681
mkr16.2704747	0.8472	0.9173	-0.0168	0.9188
mkr16.313778	0.9025	0.9488	-0.027	0.9474
mkr16.3622993	1	1	NaN	1
mkr16.4535793	0.95	0.9744	0	0.9744
mkr16.4571794	1	1	NaN	1
mkr16.4571812	1	1	NaN	1
mkr16.483002	0.95	0.9744	0	0.9744

mkr16.6245735	1	1	NaN	1
mkr16.7276763	1	1	NaN	1
mkr160.277522	0.6064	0.755	0.2962	0.7087
mkr160.47482	1	1	NaN	1
mkr160.61332	0.5863	0.7392	0.574	0.6892
mkr161.1087673	1	1	NaN	1
mkr161.1087676	1	1	NaN	1
mkr161.393289	1	1	NaN	1
mkr161.42395	1	1	NaN	1
mkr161.582474	0.609	0.757	0.3448	0.7343
mkr161.649535	1	1	NaN	1
mkr161.676568	1	1	NaN	1
mkr162.1278520	1	1	NaN	1
mkr162.1278521	1	1	NaN	1
mkr162.268654	0.8398	0.9129	-0.0206	0.9142
mkr162.290035	1	1	NaN	1
mkr162.376048	0.7474	0.8554	0.3306	0.8414
mkr162.376126	0.95	0.9744	0	0.9744
mkr162.443346	0.6525	0.7897	-0.233	0.7528
mkr162.62736	0.8946	0.9444	-0.0001	0.9457
mkr162.757365	1	1	NaN	1
mkr162.770126	1	1	NaN	1
mkr162.91053	1	1	NaN	1
mkr162.956970	1	1	NaN	1
mkr163.1226308	0.6612	0.7961	-0.2258	0.761
mkr163.638421	1	1	NaN	1
mkr163.824742	1	1	NaN	1
mkr163.97009	0.6272	0.7709	0.1286	0.7531
mkr164.1132220	1	1	NaN	1
mkr164.1188740	1	1	NaN	1
mkr164.758643	1	1	NaN	1
mkr164.969127	1	1	NaN	1
mkr165.663394	0.95	0.9744	0	0.9744
mkr165.764309	1	1	NaN	1
mkr165.782176	1	1	NaN	1
mkr165.782224	0.6088	0.7569	0.0072	0.7092
mkr166.1093952	1	1	NaN	1
mkr166.250237	0.8587	0.924	1	0.9231
mkr167.256629	1	1	NaN	1
mkr168.402786	1	1	NaN	1
mkr168.402816	1	1	NaN	1
mkr168.5735	1	1	NaN	1



mkr168.730099	1	1	NaN	1
mkr168.876142	0.5892	0.7415	0.0788	0.6899
mkr17.1039358	0.95	0.9744	0	0.9744
mkr17.1226949	1	1	NaN	1
mkr17.1307673	0.95	0.9744	0	0.9744
mkr17.1512663	1	1	NaN	1
mkr17.1786414	1	1	NaN	1
mkr17.1819650	1	1	NaN	1
mkr17.2230197	0.7341	0.8467	-0.1508	0.8275
mkr17.2683496	1	1	NaN	1
mkr17.3331825	1	1	NaN	1
mkr17.3698505	0.6943	0.8195	-0.1874	0.7927
mkr17.4010216	0.9025	0.9488	-0.027	0.9474
mkr17.5229934	0.6088	0.7569	0.0072	0.7092
mkr17.6667332	1	1	NaN	1
mkr17.6824745	0.95	0.9744	0	0.9744
mkr170.1026110	1	1	NaN	1
mkr170.1264595	1	1	NaN	1
mkr170.390019	0.9	0.9474	1	0.9474
mkr170.952490	0.5889	0.7412	0.2844	0.6898
mkr171.303063	0.95	0.9744	0	0.9744
mkr171.529429	0.6269	0.7707	-0.266	0.7264
mkr173.1228639	1	1	NaN	1
mkr173.140530	1	1	NaN	1
mkr174.206573	1	1	NaN	1
mkr174.239994	1	1	NaN	1
mkr174.406499	0.95	0.9744	0	0.9744
mkr174.406531	0.95	0.9744	0	0.9744
mkr174.67367	0.6611	0.7959	-0.2251	0.761
mkr175.392192	1	1	NaN	1
mkr176.1055908	0.8975	0.946	0	0.9473
mkr176.1066491	1	1	NaN	1
mkr176.107540	1	1	NaN	1
mkr176.765268	0.95	0.9744	0	0.9744
mkr177.1111631	1	1	NaN	1
mkr177.317559	0.95	0.9744	0	0.9744
mkr177.537945	1	1	NaN	1
mkr177.620048	1	1	NaN	1
mkr177.648866	1	1	NaN	1
mkr177.669209	0.9474	0.973	-0.0007	0.973
mkr177.701213	0.95	0.9744	0	0.9744
mkr177.83871	1	1	NaN	1

mkr177.877241	0.8859	0.9395	-0.0331	0.9376
mkr177.877244	0.8859	0.9395	-0.0331	0.9376
mkr177.877373	1	1	NaN	1
mkr177.880089	1	1	NaN	1
mkr177.914961	1	1	NaN	1
mkr178.434137	0.95	0.9744	0	0.9744
mkr179.1053590	1	1	NaN	1
mkr179.14604	1	1	NaN	1
mkr179.323859	1	1	NaN	1
mkr179.430578	1	1	NaN	1
mkr179.50706	1	1	NaN	1
mkr179.73846	0.9445	0.9715	-0.0015	0.9714
mkr179.73942	1	1	NaN	1
mkr179.753768	0.9474	0.973	0	0.973
mkr18.1413995	0.6467	0.7855	0.4821	0.7518
mkr18.143689	1	1	NaN	1
mkr18.1833273	0.6252	0.7694	0.3806	0.7292
mkr18.2033928	0.6441	0.7835	0.0762	0.7461
mkr18.209903	1	1	NaN	1
mkr18.2377684	0.6129	0.76	-0.2822	0.7118
mkr18.2406650	1	1	NaN	1
mkr18.3773861	0.6736	0.805	-0.1367	0.7914
mkr18.3995908	1	1	NaN	1
mkr18.4038452	0.7511	0.8579	-0.1348	0.8417
mkr18.4038625	0.95	0.9744	0	0.9744
mkr18.4535886	0.892	0.9429	0	0.9444
mkr18.4798728	0.7817	0.8775	0.4558	0.8681
mkr18.4850170	1	1	NaN	1
mkr18.4850202	0.9474	0.973	-0.0007	0.973
mkr18.5133765	0.9474	0.973	0	0.973
mkr18.5133866	0.95	0.9744	0	0.9744
mkr18.6550292	0.95	0.9744	0	0.9744
mkr18.945766	0.666	0.7995	0.14	0.7681
mkr180.445468	0.8425	0.9145	-0.0633	0.9096
mkr180.786319	0.8053	0.8922	-0.0909	0.8835
mkr180.85087	0.6353	0.7769	-0.1724	0.7566
mkr181.1152942	0.9474	0.973	-0.0007	0.973
mkr181.636311	0.9499	0.9743	0.0015	0.9744
mkr182.848172	0.9474	0.973	0	0.973
mkr1822.584	1	1	NaN	1
mkr183.839513	0.7087	0.8295	-0.1732	0.8057
mkr183.979177	1	1	NaN	1

mkr184.174973	1	1	NaN	1
mkr184.175026	1	1	NaN	1
mkr184.376809	1	1	NaN	1
mkr184.520603	1	1	NaN	1
mkr184.555215	0.8423	0.9144	-0.0183	0.9159
mkr184.784426	0.9474	0.973	0	0.973
mkr184.882249	1	1	NaN	1
mkr184.900042	0.8143	0.8977	-0.0857	0.8899
mkr185.1009272	1	1	NaN	1
mkr185.423674	0.7626	0.8653	-0.125	0.851
mkr185.767917	0.95	0.9743	0.0007	0.9744
mkr186.143124	1	1	NaN	1
mkr186.210693	0.95	0.9744	0	0.9744
mkr186.769539	1	1	NaN	1
mkr187.449360	1	1	NaN	1
mkr188.1008140	1	1	NaN	1
mkr188.216565	0.8569	0.9229	-0.0523	0.9192
mkr188.724000	1	1	NaN	1
mkr188.777573	0.95	0.9744	0	0.9744
mkr188.78098	1	1	NaN	1
mkr189.439426	0.9236	0.9603	-0.0072	0.96
mkr189.650866	1	1	NaN	1
mkr189.708557	1	1	NaN	1
mkr19.1816203	0.9474	0.973	-0.0007	0.973
mkr19.1976816	1	1	NaN	1
mkr19.2295722	0.95	0.9744	0	0.9744
mkr19.3280539	0.6113	0.7587	-0.2864	0.7097
mkr19.3351077	0.8793	0.9358	-0.0378	0.9335
mkr19.3353736	0.6313	0.774	0.1151	0.7343
mkr19.3607860	0.95	0.9744	0	0.9744
mkr19.4408722	1	1	NaN	1
mkr19.4408724	0.95	0.9744	0	0.9744
mkr19.4625350	1	1	NaN	1
mkr19.6464786	0.8921	0.943	-0.0318	0.9413
mkr19.6601477	0.6128	0.7599	-0.2815	0.7118
mkr19.673603	0.95	0.9743	0.0007	0.9744
mkr19.7047424	0.9499	0.9743	0.0015	0.9744
mkr19.7047909	1	1	NaN	1
mkr190.910676	0.8426	0.9146	-0.064	0.9096
mkr190.910692	0.8426	0.9146	-0.064	0.9096
mkr190.934937	0.8573	0.9232	-0.0556	0.9193
mkr191.744332	0.95	0.9744	0	0.9744

mkr192.1018857	0.95	0.9744	0	0.9744
mkr192.43431	0.8142	0.8976	-0.085	0.8898
mkr192.902119	1	1	NaN	1
mkr193.1053642	1	1	NaN	1
mkr193.148470	1	1	NaN	1
mkr193.152612	0.9445	0.9715	-0.0015	0.9714
mkr193.228576	1	1	NaN	1
mkr193.402166	0.771	0.8707	0.3372	0.8591
mkr193.418293	0.6464	0.7852	0.1364	0.7686
mkr193.502936	0.7183	0.8361	0.2376	0.8168
mkr193.525564	1	1	NaN	1
mkr193.533168	0.6923	0.8182	0.5	0.7941
mkr193.692577	0.5944	0.7456	-0.3103	0.6911
mkr193.69558	1	1	NaN	1
mkr193.69564	1	1	NaN	1
mkr193.702131	0.9443	0.9713	0.0029	0.9714
mkr193.724877	1	1	NaN	1
mkr193.740958	1	1	NaN	1
mkr193.854914	1	1	NaN	1
mkr193.863517	1	1	NaN	1
mkr193.987462	0.9444	0.9714	0.0009	0.9714
mkr194.38402	1	1	NaN	1
mkr194.407196	0.6496	0.7876	0.1281	0.7523
mkr194.724627	1	1	NaN	1
mkr195.1072271	0.6438	0.7833	0.0769	0.746
mkr195.765770	1	1	NaN	1
mkr196.1018121	1	1	NaN	1
mkr196.269495	0.8143	0.8977	-0.0857	0.8899
mkr196.628083	0.9473	0.973	0.0008	0.973
mkr196.628104	0.9024	0.9487	-0.0263	0.9474
mkr196.631070	1	1	NaN	1
mkr197.125383	1	1	NaN	1
mkr197.143069	0.95	0.9743	0.0007	0.9744
mkr198.426720	0.8142	0.8976	-0.085	0.8898
mkr198.485086	0.7611	0.8643	-0.044	0.8665
mkr198.760162	1	1	NaN	1
mkr2.10447584	0.6601	0.7952	-0.221	0.7608
mkr2.11310365	1	1	NaN	1
mkr2.12883823	1	1	NaN	1
mkr2.12883824	1	1	NaN	1
mkr2.13257442	0.947	0.9728	0.0065	0.973
mkr2.13440188	0.9025	0.9488	-0.027	0.9474

mkr2.13995060	1	1	NaN	1
mkr2.14092238	0.6834	0.8119	-0.2007	0.7824
mkr2.14092303	1	1	NaN	1
mkr2.14347389	1	1	NaN	1
mkr2.14347440	1	1	NaN	1
mkr2.14405244	1	1	NaN	1
mkr2.14427927	1	1	NaN	1
mkr2.14532622	0.9445	0.9715	-0.0015	0.9714
mkr2.14535182	1	1	NaN	1
mkr2.14631863	1	1	NaN	1
mkr2.14631878	0.6465	0.7853	-0.242	0.7465
mkr2.14709506	1	1	NaN	1
mkr2.14839272	1	1	NaN	1
mkr2.3150666	1	1	NaN	1
mkr2.3150679	1	1	NaN	1
mkr2.3150680	1	1	NaN	1
mkr2.5063818	1	1	NaN	1
mkr2.5063828	1	1	NaN	1
mkr2.554887	1	1	NaN	1
mkr2.6211177	0.6834	0.8119	-0.2007	0.7824
mkr2.6496237	1	1	NaN	1
mkr2.8547835	1	1	NaN	1
mkr2.9630646	0.6271	0.7708	-0.2667	0.7264
mkr2.9678773	1	1	NaN	1
mkr20.1074039	1	1	NaN	1
mkr20.1150236	1	1	NaN	1
mkr20.1509980	0.8573	0.9232	-0.0556	0.9193
mkr20.1509983	0.8573	0.9232	-0.0556	0.9193
mkr20.2766462	1	1	NaN	1
mkr20.3463531	1	1	NaN	1
mkr20.3505382	1	1	NaN	1
mkr20.4790663	0.6465	0.7853	-0.242	0.7465
mkr20.5405075	1	1	NaN	1
mkr20.5958172	1	1	NaN	1
mkr20.774181	0.9025	0.9488	-0.027	0.9474
mkr200.273479	0.8976	0.946	-0.0293	0.9445
mkr200.273504	0.9024	0.9487	-0.0263	0.9474
mkr200.273612	1	1	NaN	1
mkr200.53324	1	1	NaN	1
mkr200.799640	0.95	0.9744	0	0.9744
mkr200.856936	0.8572	0.9231	-0.0549	0.9193
mkr201.101644	0.6034	0.7526	-0.1477	0.7419

mkr201.115074	0.7383	0.8494	-0.1451	0.8313
mkr201.340221	0.8416	0.914	-0.0566	0.9095
mkr201.400597	0.9474	0.973	-0.0007	0.973
mkr201.417722	0.8999	0.9473	1	0.9474
mkr201.562207	0.6602	0.7954	-0.2216	0.7608
mkr202.852443	0.7061	0.8278	0.2259	0.8054
mkr203.264364	0.8976	0.946	-0.0293	0.9445
mkr203.270115	0.9025	0.9488	-0.027	0.9474
mkr203.433118	1	1	NaN	1
mkr205.271553	1	1	NaN	1
mkr205.614613	0.8921	0.943	-0.0318	0.9413
mkr205.646374	0.95	0.9744	0	0.9744
mkr206.336664	0.6271	0.7708	-0.2667	0.7264
mkr207.166589	0.95	0.9743	0.0007	0.9744
mkr207.226853	0.95	0.9744	0	0.9744
mkr207.271793	1	1	NaN	1
mkr207.366665	1	1	NaN	1
mkr207.409304	0.9445	0.9715	-0.0015	0.9714
mkr207.409342	1	1	NaN	1
mkr207.447307	1	1	NaN	1
mkr207.450361	1	1	NaN	1
mkr208.213442	0.9025	0.9488	-0.027	0.9474
mkr209.450133	0.9444	0.9714	0	0.9714
mkr209.49367	0.6969	0.8214	-0.1875	0.7948
mkr21.1168407	1	1	NaN	1
mkr21.2195347	0.8946	0.9444	-0.0001	0.9457
mkr21.2243800	0.95	0.9744	0	0.9744
mkr21.2910683	1	1	NaN	1
mkr21.3109889	1	1	NaN	1
mkr21.4930076	1	1	NaN	1
mkr21.5242487	1	1	NaN	1
mkr210.72804	0.95	0.9743	0.0007	0.9744
mkr210.77395	0.9474	0.973	-0.0007	0.973
mkr211.558189	0.6687	0.8014	-0.2157	0.7685
mkr211.789289	1	1	NaN	1
mkr214.355176	1	1	NaN	1
mkr214.444070	0.9	0.9474	1	0.9474
mkr214.463064	1	1	NaN	1
mkr214.463068	1	1	NaN	1
mkr214.613601	1	1	NaN	1
mkr214.677554	1	1	NaN	1
mkr214.753991	1	1	NaN	1

mkr214.765553	1	1	NaN	1
mkr215.432511	0.9474	0.973	-0.0007	0.973
mkr215.713627	0.8975	0.946	0	0.9473
mkr216.536016	1	1	NaN	1
mkr217.472692	1	1	NaN	1
mkr217.480193	1	1	NaN	1
mkr218.404880	1	1	NaN	1
mkr218.527703	0.9474	0.973	-0.0007	0.973
mkr218.684867	0.6612	0.7961	-0.2258	0.761
mkr219.154502	0.95	0.9744	0	0.9744
mkr219.282773	0.9474	0.973	-0.0007	0.973
mkr219.300214	0.9025	0.9488	-0.027	0.9474
mkr219.649956	0.9445	0.9715	-0.0015	0.9714
mkr219.678498	0.6129	0.76	-0.2822	0.7118
mkr22.1843435	1	1	NaN	1
mkr22.2382596	0.79	0.8827	1	0.876
mkr22.2628020	1	1	NaN	1
mkr22.3768916	0.8426	0.9146	-0.064	0.9096
mkr22.3768958	0.8426	0.9146	-0.064	0.9096
mkr22.3768967	0.8426	0.9146	-0.064	0.9096
mkr22.3769024	0.8503	0.9191	-0.0595	0.9147
mkr22.3944791	0.95	0.9743	0.0007	0.9744
mkr22.4015123	1	1	NaN	1
mkr22.4477242	1	1	NaN	1
mkr22.5891032	1	1	NaN	1
mkr22.5959475	0.7088	0.8296	-0.1738	0.8058
mkr22.6622454	0.95	0.9743	0.0007	0.9744
mkr22.913075	0.6346	0.7764	-0.2525	0.735
mkr220.155160	0.95	0.9744	0	0.9744
mkr220.495450	0.9413	0.9698	-0.0023	0.9697
mkr220.696506	1	1	NaN	1
mkr220.741458	0.95	0.9744	0	0.9744
mkr221.357981	0.6833	0.8118	-0.2	0.7824
mkr221.671816	1	1	NaN	1
mkr222.134524	0.5944	0.7456	-0.3103	0.6911
mkr222.317699	1	1	NaN	1
mkr222.351354	1	1	NaN	1
mkr222.351393	1	1	NaN	1
mkr222.41876	1	1	NaN	1
mkr222.41905	1	1	NaN	1
mkr222.459495	0.6946	0.8198	0.1593	0.7944
mkr222.538406	0.7845	0.8793	-0.1043	0.8683

mkr222.602115	1	1	NaN	1
mkr222.643136	0.95	0.9744	0	0.9744
mkr222.782475	0.5874	0.7401	0.487	0.6895
mkr222.782479	0.5874	0.7401	0.487	0.6895
mkr223.770973	0.95	0.9743	0.0007	0.9744
mkr223.770979	0.95	0.9743	0.0007	0.9744
mkr224.296675	0.6465	0.7853	-0.242	0.7465
mkr224.387080	1	1	NaN	1
mkr224.619455	1	1	NaN	1
mkr225.417828	0.5944	0.7456	-0.3103	0.6911
mkr225.600890	0.95	0.9744	0	0.9744
mkr226.400460	0.95	0.9743	0.0007	0.9744
mkr227.140519	1	1	NaN	1
mkr227.140520	0.95	0.9744	0	0.9744
mkr227.318668	1	1	NaN	1
mkr227.461254	0.95	0.9744	0	0.9744
mkr227.470495	1	1	NaN	1
mkr227.499785	1	1	NaN	1
mkr227.603308	1	1	NaN	1
mkr227.603345	1	1	NaN	1
mkr227.629583	0.9474	0.973	-0.0007	0.973
mkr228.251373	1	1	NaN	1
mkr228.704839	0.95	0.9743	0.0007	0.9744
mkr229.169341	0.9498	0.9743	0.0033	0.9744
mkr229.34198	0.7465	0.8548	-0.0785	0.8506
mkr23.1502215	1	1	NaN	1
mkr23.2074824	0.5944	0.7456	-0.3103	0.6911
mkr23.2244807	0.6163	0.7626	0.3982	0.7275
mkr23.2437244	1	1	NaN	1
mkr23.27718	1	1	NaN	1
mkr23.3928440	1	1	NaN	1
mkr23.3928457	1	1	NaN	1
mkr23.4241463	0.9499	0.9743	0.0023	0.9744
mkr23.526752	1	1	NaN	1
mkr23.725455	0.95	0.9744	0	0.9744
mkr23.77553	1	1	NaN	1
mkr230.191204	1	1	NaN	1
mkr230.197486	1	1	NaN	1
mkr230.322809	1	1	NaN	1
mkr230.735168	0.6305	0.7734	-0.2606	0.7302
mkr231.108225	1	1	NaN	1
mkr232.149836	0.9024	0.9487	-0.0263	0.9474



mkr232.426604	1	1	NaN	1
mkr233.480098	1	1	NaN	1
mkr233.497769	1	1	NaN	1
mkr233.570500	0.95	0.9743	0.0007	0.9744
mkr233.570638	1	1	NaN	1
mkr233.690040	1	1	NaN	1
mkr234.107047	0.9174	0.9569	-0.009	0.9565
mkr235.174220	1	1	NaN	1
mkr235.357273	0.95	0.9744	0	0.9744
mkr235.665471	1	1	NaN	1
mkr236.70524	0.9474	0.973	-0.0007	0.973
mkr236.78155	0.9474	0.973	-0.0007	0.973
mkr237.197775	1	1	NaN	1
mkr237.197777	1	1	NaN	1
mkr238.273505	0.7541	0.8598	-0.0464	0.8619
mkr24.14251	0.7733	0.8722	-0.1176	0.8593
mkr24.1498642	0.95	0.9744	0	0.9744
mkr24.1498644	0.95	0.9744	0	0.9744
mkr24.1833004	1	1	NaN	1
mkr24.2241099	1	1	NaN	1
mkr24.4409104	0.9174	0.9569	-0.009	0.9565
mkr24.4409149	0.9174	0.9569	-0.009	0.9565
mkr24.5476125	0.95	0.9744	0	0.9744
mkr24.5476147	0.95	0.9744	0	0.9744
mkr24.5624486	1	1	NaN	1
mkr24.5786366	1	1	NaN	1
mkr24.6110632	0.8573	0.9232	-0.0556	0.9193
mkr24.6391865	0.8054	0.8922	-0.0916	0.8835
mkr24.862	0.6465	0.7853	-0.242	0.7465
mkr24.869308	0.6834	0.8119	-0.2007	0.7824
mkr24.869335	0.7383	0.8494	-0.1451	0.8313
mkr24.907126	1	1	NaN	1
mkr24.913299	0.7732	0.8721	-0.117	0.8592
mkr240.104056	0.95	0.9743	0.0007	0.9744
mkr240.195412	0.9445	0.9715	-0.0015	0.9714
mkr240.276728	0.6612	0.7961	-0.2258	0.761
mkr240.276762	0.7088	0.8296	-0.1738	0.8058
mkr240.75600	1	1	NaN	1
mkr240.75601	1	1	NaN	1
mkr241.12159	0.95	0.9744	0	0.9744
mkr241.189666	0.95	0.9744	0	0.9744
mkr241.189725	1	1	NaN	1

mkr241.196102	1	1	NaN	1
mkr242.326181	0.8975	0.946	0	0.9473
mkr243.350504	1	1	NaN	1
mkr247.554489	0.6249	0.7692	0.3812	0.7291
mkr247.578070	0.6525	0.7897	-0.233	0.7528
mkr247.578218	0.6687	0.8014	-0.2157	0.7685
mkr247.590201	0.6833	0.8118	-0.2	0.7824
mkr248.366607	1	1	NaN	1
mkr248.79966	1	1	NaN	1
mkr249.209454	1	1	NaN	1
mkr249.305594	0.8143	0.8977	-0.0857	0.8899
mkr25.1064715	1	1	NaN	1
mkr25.1213568	1	1	NaN	1
mkr25.1963261	0.8975	0.946	0	0.9473
mkr25.2559622	0.9445	0.9715	-0.0015	0.9714
mkr25.3518295	1	1	NaN	1
mkr25.3924423	0.95	0.9743	0.0007	0.9744
mkr25.4270124	0.9474	0.973	-0.0007	0.973
mkr25.4629633	0.8573	0.9232	-0.0556	0.9193
mkr25.4732765	0.95	0.9744	0	0.9744
mkr25.5762978	1	1	NaN	1
mkr25.840042	0.95	0.9744	0	0.9744
mkr251.251362	1	1	NaN	1
mkr252.364678	1	1	NaN	1
mkr252.364747	1	1	NaN	1
mkr252.371880	0.9474	0.973	-0.0007	0.973
mkr252.371886	0.9474	0.973	-0.0007	0.973
mkr252.399910	1	1	NaN	1
mkr253.360905	1	1	NaN	1
mkr253.360999	0.95	0.9744	0	0.9744
mkr253.393972	0.6113	0.7587	-0.2864	0.7097
mkr254.324439	1	1	NaN	1
mkr254.363505	0.9474	0.973	-0.0007	0.973
mkr254.46043	0.9474	0.973	-0.0007	0.973
mkr255.145939	1	1	NaN	1
mkr255.261604	0.8921	0.9429	-0.0311	0.9413
mkr255.49565	1	1	NaN	1
mkr255.535692	0.6305	0.7734	-0.2606	0.7302
mkr256.351542	0.7088	0.8296	-0.1738	0.8058
mkr258.335614	1	1	NaN	1
mkr258.41376	0.6549	0.7914	-0.1442	0.7769
mkr258.593310	1	1	NaN	1

mkr259.129750	0.8397	0.9129	0.6522	0.9094
mkr259.89154	0.9024	0.9487	-0.0263	0.9474
mkr26.117534	1	1	NaN	1
mkr26.1362137	0.9499	0.9743	0.0015	0.9744
mkr26.2061138	0.95	0.9744	0	0.9744
mkr26.2173499	0.9474	0.973	-0.0007	0.973
mkr26.2173503	0.9474	0.973	-0.0007	0.973
mkr26.2904773	1	1	NaN	1
mkr26.2904783	1	1	NaN	1
mkr26.5190071	0.7511	0.8579	-0.1348	0.8417
mkr26.6481310	1	1	NaN	1
mkr260.187819	0.8528	0.9206	-0.0179	0.9217
mkr260.187900	1	1	NaN	1
mkr260.187907	1	1	NaN	1
mkr260.244333	0.8143	0.8977	-0.0857	0.8899
mkr260.72995	1	1	NaN	1
mkr261.199959	1	1	NaN	1
mkr261.233122	1	1	NaN	1
mkr261.333769	1	1	NaN	1
mkr261.333792	1	1	NaN	1
mkr261.337724	1	1	NaN	1
mkr265.270501	0.8789	0.9355	0	0.9374
mkr267.174073	1	1	NaN	1
mkr267.174228	0.9474	0.973	-0.0007	0.973
mkr267.232348	0.95	0.9744	0	0.9744
mkr267.241526	0.8714	0.9313	-0.0391	0.9288
mkr267.291298	1	1	NaN	1
mkr267.480796	1	1	NaN	1
mkr267.481950	0.95	0.9743	0.0007	0.9744
mkr267.526200	0.9474	0.973	-0.0007	0.973
mkr267.71183	0.95	0.9744	0	0.9744
mkr268.555387	0.6465	0.7853	-0.242	0.7465
mkr269.94077	1	1	NaN	1
mkr27.3981126	1	1	NaN	1
mkr27.4205615	1	1	NaN	1
mkr27.5203032	0.9025	0.9488	-0.027	0.9474
mkr27.5513976	0.6305	0.7734	-0.2606	0.7302
mkr27.6104071	0.7956	0.8862	-0.0982	0.8764
mkr27.6546901	1	1	NaN	1
mkr2718.183	1	1	NaN	1
mkr272.208488	0.7817	0.8775	0.4558	0.8681
mkr272.370532	0.9473	0.973	0.0008	0.973

mkr272.486229	0.95	0.9743	0.0007	0.9744
mkr273.227287	0.8502	0.919	-0.0173	0.9203
mkr273.553359	1	1	NaN	1
mkr275.173698	1	1	NaN	1
mkr275.173724	1	1	NaN	1
mkr275.279378	1	1	NaN	1
mkr2753.501	0.9377	0.9678	-0.0026	0.9677
mkr2753.518	0.85	0.9189	-0.0572	0.9147
mkr276.189406	1	1	NaN	1
mkr276.278368	1	1	NaN	1
mkr276.283073	1	1	NaN	1
mkr276.322713	0.663	0.7973	-0.0957	0.7952
mkr277.153935	0.9445	0.9715	-0.0015	0.9714
mkr277.153938	0.9445	0.9715	-0.0015	0.9714
mkr277.177680	1	1	NaN	1
mkr278.313152	0.6967	0.8213	-0.1868	0.7947
mkr278.469404	0.8919	0.9429	-0.0294	0.9413
mkr279.171044	0.73	0.8439	0.3673	0.8408
mkr279.193965	0.95	0.9744	0	0.9744
mkr279.194013	0.95	0.9744	0	0.9744
mkr279.54390	0.8426	0.9146	-0.064	0.9096
mkr28.1254555	1	1	NaN	1
mkr28.1739822	1	1	NaN	1
mkr28.2474234	0.7956	0.8862	-0.0982	0.8764
mkr28.2867294	1	1	NaN	1
mkr28.2867336	0.6478	0.7862	0.1337	0.752
mkr28.3287342	1	1	NaN	1
mkr28.3484353	0.8143	0.8977	-0.0857	0.8899
mkr28.3649848	1	1	NaN	1
mkr28.4358131	0.6867	0.8142	0.2702	0.805
mkr28.5875859	1	1	NaN	1
mkr28.634265	0.7602	0.8638	0.3327	0.8508
mkr28.6518358	1	1	NaN	1
mkr28.6518363	1	1	NaN	1
mkr28.74404	0.6943	0.8195	-0.1874	0.7927
mkr28.917083	0.7733	0.8722	-0.1176	0.8593
mkr280.51631	1	1	NaN	1
mkr281.418560	1	1	NaN	1
mkr282.305424	1	1	NaN	1
mkr282.468875	1	1	NaN	1
mkr284.116517	0.8678	0.9292	1	0.9286
mkr284.235598	0.8949	0.9445	1	0.9444

mkr284.361601	1	1	NaN	1
mkr284.361613	1	1	NaN	1
mkr284.499949	0.8921	0.943	-0.0318	0.9413
mkr284.70531	1	1	NaN	1
mkr286.310860	0.6602	0.7954	-0.2216	0.7608
mkr289.228029	1	1	NaN	1
mkr289.77171	1	1	NaN	1
mkr29.1422968	1	1	NaN	1
mkr29.1933214	1	1	NaN	1
mkr29.2448843	1	1	NaN	1
mkr29.3528400	0.9376	0.9678	-0.001	0.9677
mkr29.3798479	0.95	0.9744	0	0.9744
mkr29.3798481	1	1	NaN	1
mkr29.3843418	1	1	NaN	1
mkr29.3949242	0.5941	0.7454	-0.309	0.691
mkr29.4104712	1	1	NaN	1
mkr29.417650	1	1	NaN	1
mkr29.4252059	0.9024	0.9487	-0.0263	0.9474
mkr29.4702840	0.6749	0.8059	0.2073	0.7774
mkr29.4702843	0.7046	0.8267	0.3075	0.8052
mkr29.495144	1	1	NaN	1
mkr29.5049077	0.95	0.9743	0.0007	0.9744
mkr290.247997	0.6195	0.7651	-0.0914	0.7683
mkr290.438464	0.6525	0.7897	-0.233	0.7528
mkr291.125728	1	1	NaN	1
mkr291.199767	1	1	NaN	1
mkr291.202434	0.6064	0.755	0.2962	0.7087
mkr291.284082	0.7577	0.8621	0.7802	0.8505
mkr291.363685	0.7059	0.8276	0.2265	0.8054
mkr293.211443	0.8975	0.946	0	0.9473
mkr293.22850	0.9474	0.973	0	0.973
mkr293.74250	0.8563	0.9226	1	0.923
mkr296.455363	0.95	0.9744	0	0.9744
mkr297.402156	0.6687	0.8014	-0.2157	0.7685
mkr297.402181	0.7593	0.8632	-0.1244	0.8487
mkr297.456558	0.7239	0.8399	-0.1564	0.8193
mkr298.303033	1	1	NaN	1
mkr298.303102	1	1	NaN	1
mkr3.1016203	0.5905	0.7425	0.0289	0.6902
mkr3.11028420	0.6525	0.7897	-0.233	0.7528
mkr3.11373809	0.95	0.9744	0	0.9744
mkr3.11373827	0.6486	0.7869	-0.1603	0.7689

mkr3.11611815	0.6923	0.8182	0.5	0.7941
mkr3.12216193	1	1	NaN	1
mkr3.12245187	1	1	NaN	1
mkr3.12245309	0.8975	0.946	-0.0286	0.9445
mkr3.13886974	1	1	NaN	1
mkr3.2128488	0.95	0.9743	0.0007	0.9744
mkr3.2777527	0.95	0.9744	0	0.9744
mkr3.292180	1	1	NaN	1
mkr3.3097978	0.61	0.7577	0.7572	0.7204
mkr3.3968735	1	1	NaN	1
mkr3.4669043	0.7034	0.8259	0.6171	0.8051
mkr3.5383062	1	1	NaN	1
mkr3.56287	0.6101	0.7578	0.0472	0.7112
mkr3.6074543	0.9445	0.9715	-0.0015	0.9714
mkr3.621103	1	1	NaN	1
mkr3.655411	1	1	NaN	1
mkr3.7191262	1	1	NaN	1
mkr3.7270882	1	1	NaN	1
mkr3.7828470	0.95	0.9744	0	0.9744
mkr3.8188830	0.5931	0.7446	-0.3052	0.6908
mkr3.8607270	1	1	NaN	1
mkr3.9947178	1	1	NaN	1
mkr30.1849742	1	1	NaN	1
mkr30.2324055	0.6084	0.7566	0.107	0.7131
mkr30.3623984	1	1	NaN	1
mkr30.4120609	0.95	0.9743	0.0007	0.9744
mkr30.4308219	0.8949	0.9445	1	0.9444
mkr30.485987	0.95	0.9744	0	0.9744
mkr30.5317468	1	1	NaN	1
mkr30.5317586	0.9474	0.973	0	0.973
mkr30.5469598	1	1	NaN	1
mkr30.5469625	1	1	NaN	1
mkr30.6098430	1	1	NaN	1
mkr30.791489	0.9377	0.9678	-0.0033	0.9677
mkr300.173097	0.9474	0.973	-0.0007	0.973
mkr302.304431	0.8793	0.9358	-0.0378	0.9335
mkr302.348846	0.95	0.9744	0	0.9744
mkr307.157379	0.7708	0.8706	0.3378	0.859
mkr307.328465	0.8921	0.943	-0.0318	0.9413
mkr308.316951	1	1	NaN	1
mkr309.150929	1	1	NaN	1
mkr309.392171	0.6822	0.8111	0.7699	0.7886

mkr31.1237369	1	1	NaN	1
mkr31.1237404	0.95	0.9744	0	0.9744
mkr31.1672513	1	1	NaN	1
mkr31.1797613	1	1	NaN	1
mkr31.1822847	1	1	NaN	1
mkr31.1822887	1	1	NaN	1
mkr31.1916802	0.95	0.9744	0	0.9744
mkr31.2262838	1	1	NaN	1
mkr31.2946476	0.95	0.9744	0	0.9744
mkr31.3029619	1	1	NaN	1
mkr31.3096958	1	1	NaN	1
mkr31.3367673	1	1	NaN	1
mkr31.4066376	1	1	NaN	1
mkr31.4362176	1	1	NaN	1
mkr31.4843010	1	1	NaN	1
mkr31.649722	0.9474	0.973	-0.0007	0.973
mkr310.145937	1	1	NaN	1
mkr311.330558	0.9412	0.9697	-0.0009	0.9697
mkr313.361797	1	1	NaN	1
mkr314.116425	1	1	NaN	1
mkr314.181610	1	1	NaN	1
mkr315.166357	0.6969	0.8214	-0.1875	0.7948
mkr317.268201	0.9413	0.9698	-0.0023	0.9697
mkr32.1171719	1	1	NaN	1
mkr32.1479523	1	1	NaN	1
mkr32.1707924	0.9473	0.973	0.0008	0.973
mkr32.2151495	1	1	NaN	1
mkr32.2551051	1	1	NaN	1
mkr32.2841893	1	1	NaN	1
mkr32.3471997	1	1	NaN	1
mkr32.4037168	1	1	NaN	1
mkr32.4472722	1	1	NaN	1
mkr32.480568	1	1	NaN	1
mkr32.4879890	0.5913	0.7432	0.3382	0.7182
mkr32.5715629	1	1	NaN	1
mkr32.588851	1	1	NaN	1
mkr32.5893909	0.95	0.9744	0	0.9744
mkr32.6117142	1	1	NaN	1
mkr32.96945	1	1	NaN	1
mkr321.67545	0.8143	0.8977	-0.0857	0.8899
mkr3242.427	1	1	NaN	1
mkr3246.203	0.7221	0.8386	-0.162	0.8173

mkr326.106038	1	1	NaN	1
mkr326.106175	1	1	NaN	1
mkr326.108168	1	1	NaN	1
mkr326.108181	1	1	NaN	1
mkr326.236274	0.9001	0.9474	0	0.9487
mkr326.365303	1	1	NaN	1
mkr327.298291	1	1	NaN	1
mkr328.180836	0.95	0.9744	0	0.9744
mkr328.180930	1	1	NaN	1
mkr328.254502	0.9098	0.9528	-0.0087	0.9524
mkr328.272931	1	1	NaN	1
mkr33.4329467	0.9474	0.973	-0.0007	0.973
mkr33.4451453	1	1	NaN	1
mkr33.5156858	1	1	NaN	1
mkr33.5224335	0.8479	0.9177	-0.0194	0.9188
mkr331.317749	1	1	NaN	1
mkr331.317782	0.7733	0.8722	-0.1176	0.8593
mkr331.317813	1	1	NaN	1
mkr331.353575	1	1	NaN	1
mkr332.103334	1	1	NaN	1
mkr332.187915	0.8921	0.943	-0.0318	0.9413
mkr332.300787	1	1	NaN	1
mkr332.343815	0.95	0.9743	0.0007	0.9744
mkr337.180402	1	1	NaN	1
mkr337.215124	1	1	NaN	1
mkr337.215134	1	1	NaN	1
mkr337.215138	1	1	NaN	1
mkr339.17259	1	1	NaN	1
mkr339.46552	0.95	0.9744	0	0.9744
mkr339.88600	1	1	NaN	1
mkr34.1374429	1	1	NaN	1
mkr34.4530139	0.9473	0.973	0.0008	0.973
mkr34.4708280	0.6801	0.8096	-0.124	0.7987
mkr34.5017438	1	1	NaN	1
mkr34.5237847	0.6465	0.7853	-0.242	0.7465
mkr343.224310	0.6567	0.7928	-0.2066	0.7603
mkr345.251717	0.5941	0.7454	-0.309	0.691
mkr345.251747	0.6781	0.8082	-0.2032	0.7779
mkr349.25045	1	1	NaN	1
mkr35.1080179	1	1	NaN	1
mkr35.1419730	1	1	NaN	1
mkr35.142159	0.8975	0.946	-0.0286	0.9445



mkr35.187861	0.8359	0.9106	1	0.9092
mkr35.194525	0.8573	0.9232	-0.0556	0.9193
mkr35.2846676	1	1	NaN	1
mkr35.288320	1	1	NaN	1
mkr35.3072993	0.6463	0.7852	-0.2414	0.7465
mkr35.369787	1	1	NaN	1
mkr35.370052	1	1	NaN	1
mkr35.3868074	0.7627	0.8654	-0.1257	0.851
mkr35.4032477	1	1	NaN	1
mkr35.4453004	0.95	0.9744	0	0.9744
mkr35.4696724	0.95	0.9744	0	0.9744
mkr35.4720520	0.8975	0.946	0	0.9473
mkr35.5106080	1	1	NaN	1
mkr35.5272756	0.95	0.9744	0	0.9744
mkr35.561676	0.95	0.9744	0	0.9744
mkr35.623598	0.8976	0.946	-0.0293	0.9445
mkr35.623628	0.8976	0.946	-0.0293	0.9445
mkr35.960460	1	1	NaN	1
mkr351.234340	1	1	NaN	1
mkr352.172633	1	1	NaN	1
mkr354.105964	0.6465	0.7853	-0.242	0.7465
mkr355.275309	0.7341	0.8467	-0.1508	0.8275
mkr357.147375	1	1	NaN	1
mkr357.183060	1	1	NaN	1
mkr358.218506	1	1	NaN	1
mkr36.1172752	0.8309	0.9076	0.6508	0.9036
mkr36.1646712	0.9496	0.9742	0.0071	0.9744
mkr36.2855869	0.95	0.9743	0.0007	0.9744
mkr36.2991930	1	1	NaN	1
mkr36.3001036	0.95	0.9744	0	0.9744
mkr36.3884773	0.95	0.9744	0	0.9744
mkr36.4717295	1	1	NaN	1
mkr361.241421	0.9445	0.9715	-0.0015	0.9714
mkr362.156650	1	1	NaN	1
mkr363.116741	0.95	0.9744	0	0.9744
mkr363.99662	0.9474	0.973	-0.0007	0.973
mkr363.99715	1	1	NaN	1
mkr368.131125	1	1	NaN	1
mkr368.134659	0.7171	0.8353	0.6206	0.8167
mkr368.171494	1	1	NaN	1
mkr368.89586	0.8975	0.946	0	0.9473
mkr37.1032298	0.6226	0.7674	0.3066	0.7255

mkr37.1533667	0.95	0.9744	0	0.9744
mkr37.1703419	0.95	0.9744	0	0.9744
mkr37.1934173	0.618	0.7639	-0.1845	0.7413
mkr37.2133145	1	1	NaN	1
mkr37.279921	0.7383	0.8494	-0.1451	0.8313
mkr37.2845350	0.95	0.9743	0.0007	0.9744
mkr37.3393984	0.8015	0.8898	-0.089	0.8812
mkr37.4879993	0.95	0.9744	0	0.9744
mkr370.26376	0.9025	0.9488	-0.027	0.9474
mkr370.74982	0.748	0.8558	0.3609	0.8545
mkr371.168396	0.6276	0.7712	0.0634	0.7297
mkr372.211285	0.7877	0.8812	-0.0981	0.8711
mkr372.87880	0.95	0.9743	0.0007	0.9744
mkr376.137341	1	1	NaN	1
mkr377.106966	0.9474	0.973	-0.0007	0.973
mkr378.205232	1	1	NaN	1
mkr378.218014	1	1	NaN	1
mkr378.88823	1	1	NaN	1
mkr379.29252	0.95	0.9744	0	0.9744
mkr379.29356	0.95	0.9743	0.0007	0.9744
mkr379.42035	0.9445	0.9715	-0.0015	0.9714
mkr379.42039	1	1	NaN	1
mkr379.42764	0.8891	0.9413	0	0.9428
mkr38.1544539	1	1	NaN	1
mkr38.1544564	1	1	NaN	1
mkr38.2028038	0.8057	0.8924	-0.027	0.8948
mkr38.2111260	1	1	NaN	1
mkr38.2111269	1	1	NaN	1
mkr38.2111273	1	1	NaN	1
mkr38.2348076	1	1	NaN	1
mkr38.2348122	1	1	NaN	1
mkr38.2529240	0.95	0.9744	0	0.9744
mkr38.2756460	1	1	NaN	1
mkr38.302681	1	1	NaN	1
mkr38.3098970	0.95	0.9743	0.0007	0.9744
mkr38.4329266	1	1	NaN	1
mkr38.4347834	0.95	0.9744	0	0.9744
mkr38.4347843	0.95	0.9744	0	0.9744
mkr38.4822818	1	1	NaN	1
mkr38.4844915	0.9025	0.9488	-0.027	0.9474
mkr38.4947770	1	1	NaN	1
mkr38.4996752	0.9474	0.973	-0.0007	0.973

mkr38.604156	0.8135	0.8972	-0.0806	0.8898
mkr38.608518	0.6834	0.8119	-0.2007	0.7824
mkr380.137971	1	1	NaN	1
mkr389.104292	0.9474	0.973	-0.0007	0.973
mkr389.163590	1	1	NaN	1
mkr389.163602	0.95	0.9744	0	0.9744
mkr39.1416858	1	1	NaN	1
mkr39.1491462	0.95	0.9743	0.0007	0.9744
mkr39.1607905	1	1	NaN	1
mkr39.1628137	1	1	NaN	1
mkr39.1678001	1	1	NaN	1
mkr39.2127710	1	1	NaN	1
mkr39.2130722	0.615	0.7616	-0.2768	0.7145
mkr39.2974115	0.6611	0.7959	-0.2251	0.761
mkr39.2974146	0.8572	0.9231	-0.0549	0.9193
mkr39.3204928	1	1	NaN	1
mkr39.3490698	0.6111	0.7586	0.0764	0.7347
mkr39.3945912	0.6969	0.8214	-0.1875	0.7948
mkr39.4456156	1	1	NaN	1
mkr39.4486723	0.5922	0.7439	-0.0411	0.6906
mkr39.4854241	0.95	0.9744	0	0.9744
mkr39.4871541	1	1	NaN	1
mkr390.60991	0.7139	0.8331	-0.1034	0.8252
mkr391.157492	1	1	NaN	1
mkr393.146428	1	1	NaN	1
mkr399.125100	1	1	NaN	1
mkr399.125168	1	1	NaN	1
mkr399.125180	1	1	NaN	1
mkr399.80889	0.6525	0.7897	-0.233	0.7528
mkr399.82559	0.7221	0.8386	-0.162	0.8173
mkr399.98415	0.6966	0.8212	-0.1861	0.7947
mkr4.10326095	0.9024	0.9487	-0.0263	0.9474
mkr4.10656303	0.6317	0.7743	0.5973	0.7395
mkr4.11531224	0.95	0.9744	0	0.9744
mkr4.12171468	0.7112	0.8312	-0.102	0.8238
mkr4.1285871	1	1	NaN	1
mkr4.1613340	0.7733	0.8722	-0.1176	0.8593
mkr4.2194360	0.9474	0.973	-0.0007	0.973
mkr4.2197934	0.9024	0.9487	-0.0256	0.9474
mkr4.2576835	0.7381	0.8493	-0.1445	0.8313
mkr4.2583221	0.7732	0.8721	-0.117	0.8592
mkr4.3169370	1	1	NaN	1

mkr4.3870733	0.5915	0.7433	-0.0099	0.6904
mkr4.402644	0.7077	0.8289	-0.0885	0.8245
mkr4.4106993	1	1	NaN	1
mkr4.4449112	0.5922	0.7439	-0.0411	0.6906
mkr4.4449231	0.6465	0.7853	-0.242	0.7465
mkr4.4762465	0.8792	0.9357	-0.0371	0.9335
mkr4.4952430	1	1	NaN	1
mkr4.5194468	0.8503	0.9191	-0.0595	0.9147
mkr4.5307084	0.6865	0.8141	0.2984	0.7892
mkr4.5915765	0.8028	0.8906	0.4621	0.8833
mkr4.5915820	0.7664	0.8678	0.6399	0.8586
mkr4.6484708	0.6271	0.7708	-0.0907	0.7734
mkr4.7232845	0.9445	0.9715	-0.0008	0.9714
mkr4.7482574	0.6271	0.7708	-0.2667	0.7264
mkr4.763972	0.8426	0.9146	-0.064	0.9096
mkr4.8326154	0.8716	0.9314	-0.0415	0.9288
mkr4.8504097	1	1	NaN	1
mkr4.8765196	0.8244	0.9037	-0.0747	0.8973
mkr4.9414847	0.6834	0.8119	-0.2007	0.7824
mkr40.1240012	1	1	NaN	1
mkr40.1355263	0.646	0.7849	-0.1587	0.7675
mkr40.1355279	0.8242	0.9036	-0.0733	0.8973
mkr40.166901	0.6149	0.7615	-0.2762	0.7145
mkr40.198139	0.8053	0.8922	-0.0909	0.8835
mkr40.2938997	1	1	NaN	1
mkr40.3022819	0.8257	0.9046	-0.0181	0.9067
mkr40.3266945	0.8975	0.946	-0.0286	0.9445
mkr40.3830869	1	1	NaN	1
mkr40.3987865	0.7221	0.8386	-0.162	0.8173
mkr40.4283073	1	1	NaN	1
mkr401.23855	0.7087	0.8295	-0.1732	0.8057
mkr405.149531	0.6609	0.7958	-0.2244	0.761
mkr409.83249	1	1	NaN	1
mkr409.83269	1	1	NaN	1
mkr41.1245393	0.9025	0.9488	-0.027	0.9474
mkr41.248320	1	1	NaN	1
mkr41.248454	0.95	0.9744	0	0.9744
mkr41.2756600	1	1	NaN	1
mkr41.3669010	0.6463	0.7852	-0.2414	0.7465
mkr41.998350	0.83	0.9071	0.6527	0.9036
mkr42.1119373	0.9474	0.973	-0.0007	0.973
mkr42.1183857	0.9377	0.9678	-0.0026	0.9677

mkr42.1772637	0.9474	0.973	-0.0007	0.973
mkr42.1772644	0.9474	0.973	-0.0007	0.973
mkr42.3015673	0.8119	0.8962	0.4648	0.8897
mkr43.1093337	1	1	NaN	1
mkr43.240383	1	1	NaN	1
mkr43.2692209	0.9474	0.973	-0.0007	0.973
mkr43.2766603	0.9474	0.973	0	0.973
mkr43.3112192	0.9	0.9474	1	0.9474
mkr43.3332442	0.8141	0.8975	-0.0843	0.8898
mkr43.3635635	1	1	NaN	1
mkr43.365663	0.6741	0.8053	0.3278	0.8111
mkr43.4222680	1	1	NaN	1
mkr43.4282131	1	1	NaN	1
mkr43.4282208	1	1	NaN	1
mkr43.603556	0.8503	0.9191	-0.0595	0.9147
mkr431.103488	1	1	NaN	1
mkr44.2763411	1	1	NaN	1
mkr44.2781042	1	1	NaN	1
mkr44.3044568	1	1	NaN	1
mkr44.338914	1	1	NaN	1
mkr45.1266929	0.8143	0.8977	-0.0857	0.8899
mkr45.129073	1	1	NaN	1
mkr45.129117	1	1	NaN	1
mkr45.182941	0.8921	0.943	-0.0318	0.9413
mkr45.2425134	1	1	NaN	1
mkr45.306233	0.9474	0.973	0	0.973
mkr45.3822407	1	1	NaN	1
mkr45.384983	1	1	NaN	1
mkr45.50973	1	1	NaN	1
mkr45.575671	1	1	NaN	1
mkr45.729059	1	1	NaN	1
mkr45.78615	1	1	NaN	1
mkr450.100709	0.6898	0.8164	-0.1841	0.7897
mkr450.101466	1	1	NaN	1
mkr452.37855	1	1	NaN	1
mkr46.1034573	0.95	0.9743	0.0007	0.9744
mkr46.124509	0.7348	0.8472	0.3232	0.8309
mkr46.1475566	1	1	NaN	1
mkr46.1675007	0.8052	0.8921	-0.0901	0.8835
mkr46.2474767	0.6785	0.8084	0.4948	0.7817
mkr46.2485898	1	1	NaN	1
mkr46.2740192	1	1	NaN	1

mkr46.2805463	1	1	NaN	1
mkr46.2822294	1	1	NaN	1
mkr46.2937800	0.9474	0.973	0	0.973
mkr46.2937896	0.9473	0.973	0.0008	0.973
mkr46.3109816	0.7956	0.8862	-0.0982	0.8764
mkr46.3431602	0.6081	0.7563	0.0095	0.709
mkr46.3696681	0.95	0.9744	0	0.9744
mkr46.629601	0.7733	0.8722	-0.1176	0.8593
mkr46.746061	1	1	NaN	1
mkr465.16200	1	1	NaN	1
mkr47.1031210	0.863	0.9264	-0.0457	0.9233
mkr47.1610853	1	1	NaN	1
mkr47.177665	1	1	NaN	1
mkr47.222840	0.9025	0.9488	-0.027	0.9474
mkr47.2659471	0.6969	0.8214	-0.1875	0.7948
mkr47.3312799	1	1	NaN	1
mkr47.3353821	1	1	NaN	1
mkr47.4289538	1	1	NaN	1
mkr47.657943	0.9474	0.973	0	0.973
mkr47.718092	0.8573	0.9232	-0.0556	0.9193
mkr47.789753	0.8143	0.8977	-0.0857	0.8899
mkr47.983640	0.7196	0.8369	0.2334	0.817
mkr48.1191539	1	1	NaN	1
mkr48.1191554	1	1	NaN	1
mkr48.1350505	0.8503	0.9191	-0.0595	0.9147
mkr48.1674459	0.9499	0.9743	0.0015	0.9744
mkr48.1773675	0.7507	0.8576	-0.0445	0.8603
mkr48.17981	1	1	NaN	1
mkr48.1847962	0.9474	0.973	-0.0007	0.973
mkr48.1901687	1	1	NaN	1
mkr48.1911224	1	1	NaN	1
mkr48.1911270	0.95	0.9744	0	0.9744
mkr48.2013983	1	1	NaN	1
mkr48.2549656	0.8975	0.946	-0.0286	0.9445
mkr48.2559819	1	1	NaN	1
mkr48.2840632	1	1	NaN	1
mkr48.3177201	1	1	NaN	1
mkr48.3183530	0.9474	0.973	-0.0007	0.973
mkr48.3226245	1	1	NaN	1
mkr48.3281710	1	1	NaN	1
mkr48.3564881	0.9499	0.9743	0.0023	0.9744
mkr48.3800164	1	1	NaN	1

mkr48.751108	1	1	NaN	1
mkr48.972966	1	1	NaN	1
mkr49.1116440	0.8999	0.9473	1	0.9474
mkr49.1488593	0.8976	0.946	-0.0293	0.9445
mkr49.173490	1	1	NaN	1
mkr49.1818498	0.7342	0.8467	-0.1515	0.8275
mkr49.2173492	0.7341	0.8467	-0.1508	0.8275
mkr49.251957	0.95	0.9743	0.0007	0.9744
mkr49.273340	1	1	NaN	1
mkr49.28496	0.7733	0.8722	-0.1176	0.8593
mkr49.3337614	0.6303	0.7732	-0.26	0.7302
mkr49.3403027	0.6782	0.8082	0.4953	0.7816
mkr49.3492002	1	1	NaN	1
mkr49.381280	1	1	NaN	1
mkr49.382448	1	1	NaN	1
mkr49.4071436	1	1	NaN	1
mkr49.4082148	1	1	NaN	1
mkr49.4082180	1	1	NaN	1
mkr5.10123596	1	1	NaN	1
mkr5.10531264	0.8975	0.946	0	0.9473
mkr5.1053255	1	1	NaN	1
mkr5.10544702	0.6913	0.8175	0.2173	0.7923
mkr5.10949892	0.666	0.7995	0.14	0.7681
mkr5.10994718	0.6093	0.7572	0.0495	0.7111
mkr5.10994760	1	1	NaN	1
mkr5.11105681	1	1	NaN	1
mkr5.11506904	1	1	NaN	1
mkr5.11598727	0.9445	0.9715	-0.0008	0.9714
mkr5.1608015	0.95	0.9744	0	0.9744
mkr5.2228965	0.6271	0.7708	-0.2667	0.7264
mkr5.3628417	1	1	NaN	1
mkr5.3628458	1	1	NaN	1
mkr5.381818	1	1	NaN	1
mkr5.442891	0.95	0.9744	0	0.9744
mkr5.7276342	0.95	0.9744	0	0.9744
mkr5.7621500	0.8502	0.919	-0.0173	0.9203
mkr5.813411	0.6303	0.7732	-0.26	0.7302
mkr5.8328733	1	1	NaN	1
mkr5.8358646	0.6597	0.795	-0.1447	0.7798
mkr5.897770	0.95	0.9743	0.0007	0.9744
mkr50.1085490	0.7196	0.8369	0.2334	0.817
mkr50.1678885	0.7342	0.8467	-0.1515	0.8275

mkr50.2376745	0.8054	0.8922	-0.0916	0.8835
mkr50.2814485	1	1	NaN	1
mkr50.3479555	1	1	NaN	1
mkr50.3773542	1	1	NaN	1
mkr50.3773664	0.9474	0.973	0	0.973
mkr50.379165	0.6276	0.7712	0.0634	0.7297
mkr50.379206	0.6276	0.7712	0.0634	0.7297
mkr50.755956	1	1	NaN	1
mkr507.2899	0.9375	0.9677	0	0.9677
mkr51.2380514	1	1	NaN	1
mkr51.3360358	0.7956	0.8862	-0.0982	0.8764
mkr51.3484585	1	1	NaN	1
mkr51.3484640	0.6496	0.7876	0.1281	0.7523
mkr51.3901574	1	1	NaN	1
mkr51.3901580	1	1	NaN	1
mkr51.577957	0.8891	0.9413	0	0.9428
mkr517.60293	1	1	NaN	1
mkr519.22266	1	1	NaN	1
mkr519.59401	0.8758	0.9338	1	0.9334
mkr52.1061135	0.9444	0.9714	0.0009	0.9714
mkr52.1095381	0.7083	0.8292	-0.1006	0.8222
mkr52.2028519	1	1	NaN	1
mkr52.2131378	0.9474	0.973	0	0.973
mkr52.2782127	1	1	NaN	1
mkr52.3743243	0.7317	0.8451	0.2407	0.8273
mkr52.3773545	0.95	0.9744	0	0.9744
mkr52.671011	0.6278	0.7714	0.0628	0.7297
mkr52.904299	0.751	0.8578	-0.1341	0.8417
mkr53.1793971	1	1	NaN	1
mkr53.689240	0.9474	0.973	0	0.973
mkr54.1101286	1	1	NaN	1
mkr54.1436042	0.6609	0.7958	-0.2244	0.761
mkr54.182037	0.9474	0.973	0	0.973
mkr54.1936550	1	1	NaN	1
mkr54.2192979	0.6463	0.7852	-0.2414	0.7465
mkr54.3141932	1	1	NaN	1
mkr54.3295135	1	1	NaN	1
mkr54.3306346	0.9445	0.9715	-0.0015	0.9714
mkr54.3551926	0.9474	0.973	-0.0007	0.973
mkr54.3551966	1	1	NaN	1
mkr54.3625582	0.671	0.8031	-0.1351	0.79
mkr54.3636111	1	1	NaN	1



mkr54.3636188	1	1	NaN	1
mkr54.570205	1	1	NaN	1
mkr54.931604	0.7627	0.8654	-0.1257	0.851
mkr55.1047278	1	1	NaN	1
mkr55.1081089	0.722	0.8385	-0.1613	0.8173
mkr55.1081112	0.6486	0.7869	-0.1603	0.7689
mkr55.2416240	0.6744	0.8056	0.2088	0.7773
mkr55.2488535	0.8716	0.9314	-0.0415	0.9288
mkr55.2488581	0.6834	0.8119	-0.2007	0.7824
mkr55.2584759	0.6685	0.8013	-0.215	0.7685
mkr55.2865395	1	1	NaN	1
mkr55.3586897	0.6936	0.8191	-0.1842	0.7926
mkr55.870207	0.7085	0.8294	-0.1724	0.8057
mkr56.1032347	0.9474	0.973	-0.0007	0.973
mkr56.1032443	1	1	NaN	1
mkr56.104571	0.95	0.9743	0.0007	0.9744
mkr56.182355	1	1	NaN	1
mkr56.1906444	0.7956	0.8862	-0.0982	0.8764
mkr56.1906513	0.8054	0.8922	-0.0916	0.8835
mkr56.1906550	0.8503	0.9191	-0.0595	0.9147
mkr56.2625708	1	1	NaN	1
mkr56.2928088	0.8425	0.9145	-0.0633	0.9096
mkr56.3640997	0.95	0.9744	0	0.9744
mkr56.3784468	0.95	0.9744	0	0.9744
mkr56.3795734	1	1	NaN	1
mkr56.604942	1	1	NaN	1
mkr56.604950	1	1	NaN	1
mkr56.699433	1	1	NaN	1
mkr56.73579	0.8426	0.9146	-0.064	0.9096
mkr56.970976	1	1	NaN	1
mkr57.144379	1	1	NaN	1
mkr57.161856	1	1	NaN	1
mkr57.1869747	1	1	NaN	1
mkr57.233940	0.6525	0.7897	-0.233	0.7528
mkr57.2440332	1	1	NaN	1
mkr57.2668673	1	1	NaN	1
mkr57.2736955	1	1	NaN	1
mkr57.3236696	1	1	NaN	1
mkr57.3236705	1	1	NaN	1
mkr57.3356149	0.6305	0.7734	-0.2606	0.7302
mkr57.3584400	1	1	NaN	1
mkr57.3833933	0.6346	0.7764	-0.2525	0.735

mkr57.756810	0.9444	0.9714	0.0009	0.9714
mkr58.103618	0.9445	0.9715	-0.0015	0.9714
mkr58.1097399	0.6969	0.8214	-0.1875	0.7948
mkr58.1098231	0.95	0.9744	0	0.9744
mkr58.1211818	0.95	0.9744	0	0.9744
mkr58.1415442	1	1	NaN	1
mkr58.1581648	0.771	0.8707	0.3372	0.8591
mkr58.165621	0.8452	0.9161	-0.0189	0.9174
mkr58.165782	1	1	NaN	1
mkr58.2246722	0.8861	0.9396	-0.0346	0.9376
mkr58.2254002	0.8975	0.946	-0.0286	0.9445
mkr58.2403998	0.6834	0.8119	-0.2007	0.7824
mkr58.2468148	0.8503	0.9191	-0.0595	0.9147
mkr58.2516712	1	1	NaN	1
mkr58.2592987	0.8142	0.8976	-0.085	0.8898
mkr58.3232505	0.8549	0.9218	0.6545	0.9191
mkr58.3249277	0.8408	0.9135	-0.0508	0.9095
mkr58.3313327	0.7626	0.8653	-0.125	0.851
mkr58.3313334	0.7732	0.8721	-0.117	0.8592
mkr58.335065	0.95	0.9743	0.0007	0.9744
mkr58.3591142	1	1	NaN	1
mkr58.3664416	0.9474	0.973	-0.0007	0.973
mkr58.3664488	0.9377	0.9678	-0.0033	0.9677
mkr58.418813	1	1	NaN	1
mkr58.418861	1	1	NaN	1
mkr58.56160	0.8861	0.9396	-0.0346	0.9376
mkr58.616274	0.8339	0.9094	-0.0683	0.9038
mkr58.762343	0.7956	0.8862	-0.0982	0.8764
mkr58.961373	0.95	0.9744	0	0.9744
mkr59.1052252	1	1	NaN	1
mkr59.2271395	1	1	NaN	1
mkr59.3219508	0.6346	0.7764	-0.2525	0.735
mkr592.37147	1	1	NaN	1
mkr6.10282678	1	1	NaN	1
mkr6.10282699	1	1	NaN	1
mkr6.10282717	0.9001	0.9474	0	0.9487
mkr6.1621678	0.95	0.9744	0	0.9744
mkr6.2183722	1	1	NaN	1
mkr6.2366313	0.9474	0.973	-0.0007	0.973
mkr6.2421590	1	1	NaN	1
mkr6.2501428	0.9001	0.9474	0	0.9487
mkr6.3446185	1	1	NaN	1

mkr6.4465297	1	1	NaN	1
mkr6.4874331	0.8947	0.9444	1	0.9444
mkr6.553730	0.8572	0.9231	-0.0549	0.9193
mkr6.6094544	0.8054	0.8922	-0.0916	0.8835
mkr6.7333505	0.9474	0.973	0	0.973
mkr6.904096	1	1	NaN	1
mkr6.905417	0.9025	0.9488	-0.027	0.9474
mkr6.9116267	0.9413	0.9698	-0.0023	0.9697
mkr6.9610135	1	1	NaN	1
mkr6.9719709	0.9474	0.973	-0.0007	0.973
mkr60.1069884	1	1	NaN	1
mkr60.1756320	1	1	NaN	1
mkr60.2428230	0.8424	0.9144	-0.0625	0.9096
mkr60.3444584	1	1	NaN	1
mkr60.3509278	1	1	NaN	1
mkr60.3518368	1	1	NaN	1
mkr60.3623148	1	1	NaN	1
mkr60.3623166	1	1	NaN	1
mkr60.3623358	0.6778	0.808	-0.2018	0.7778
mkr60.3703773	0.6134	0.7604	0.1654	0.7171
mkr61.1325160	1	1	NaN	1
mkr61.1401506	0.6271	0.7708	-0.2467	0.7296
mkr61.1872653	1	1	NaN	1
mkr61.2332590	0.722	0.8385	-0.1613	0.8173
mkr61.3106075	1	1	NaN	1
mkr61.3236042	0.6269	0.7707	-0.266	0.7264
mkr61.3378119	0.8244	0.9037	-0.0747	0.8973
mkr611.9436	0.8606	0.9251	-0.0264	0.9232
mkr62.1058916	1	1	NaN	1
mkr62.1331074	1	1	NaN	1
mkr62.2167665	0.95	0.9744	0	0.9744
mkr62.2721053	0.9474	0.973	-0.0007	0.973
mkr62.3129666	1	1	NaN	1
mkr62.3129672	1	1	NaN	1
mkr62.3585952	0.6911	0.8173	0.2179	0.7923
mkr63.1204795	1	1	NaN	1
mkr63.1257652	0.8503	0.9191	-0.0595	0.9147
mkr63.1339096	0.886	0.9395	-0.0339	0.9376
mkr63.1367818	0.9474	0.973	-0.0007	0.973
mkr63.1799720	1	1	NaN	1
mkr63.2190175	0.9474	0.973	0	0.973
mkr63.2320816	0.8921	0.943	-0.0318	0.9413

mkr63.2605777	0.5939	0.7452	-0.3084	0.6909
mkr63.3292348	0.8503	0.9191	-0.0595	0.9147
mkr63.3326512	0.8143	0.8977	-0.0857	0.8899
mkr63.3377071	1	1	NaN	1
mkr63.534142	1	1	NaN	1
mkr631.12440	1	1	NaN	1
mkr633.16114	1	1	NaN	1
mkr64.1270226	1	1	NaN	1
mkr64.148136	0.95	0.9744	0	0.9744
mkr64.267574	0.7351	0.8473	0.3225	0.8309
mkr64.3009140	0.95	0.9743	0.0007	0.9744
mkr64.3024594	0.8052	0.8921	-0.0901	0.8835
mkr641.20159	1	1	NaN	1
mkr65.1912938	0.8143	0.8977	-0.0857	0.8899
mkr65.2569667	0.6969	0.8214	-0.1875	0.7948
mkr65.3409293	1	1	NaN	1
mkr65.341179	1	1	NaN	1
mkr66.2010471	1	1	NaN	1
mkr66.2072542	0.8502	0.919	-0.0173	0.9203
mkr66.2290768	0.7221	0.8386	-0.162	0.8173
mkr66.2920398	1	1	NaN	1
mkr66.2963699	0.8503	0.9191	-0.0595	0.9147
mkr66.2963730	0.9474	0.973	-0.0007	0.973
mkr66.3046857	1	1	NaN	1
mkr66.749462	0.95	0.9744	0	0.9744
mkr67.1527175	0.7956	0.8862	-0.0982	0.8764
mkr67.1879956	1	1	NaN	1
mkr67.2028766	1	1	NaN	1
mkr67.240720	0.8053	0.8922	-0.0909	0.8835
mkr67.2461997	1	1	NaN	1
mkr67.2877725	0.8479	0.9177	-0.0194	0.9188
mkr67.2910953	1	1	NaN	1
mkr67.29218	0.8426	0.9146	-0.064	0.9096
mkr67.29225	0.8426	0.9146	-0.064	0.9096
mkr67.85214	0.7082	0.8292	-0.171	0.8057
mkr67.85386	0.9474	0.973	-0.0007	0.973
mkr67.85458	0.9474	0.973	-0.0007	0.973
mkr67.944408	0.95	0.9744	0	0.9744
mkr68.1310248	1	1	NaN	1
mkr68.1322642	0.95	0.9744	0	0.9744
mkr68.1337477	1	1	NaN	1
mkr68.1754015	1	1	NaN	1

mkr68.1754038	1	1	NaN	1
mkr68.182758	1	1	NaN	1
mkr68.2675538	0.7197	0.837	0.3182	0.8188
mkr68.613688	0.95	0.9743	0.0007	0.9744
mkr68.734068	1	1	NaN	1
mkr68.739847	0.6111	0.7586	-0.2857	0.7097
mkr69.207005	0.5931	0.7446	-0.3052	0.6908
mkr69.2176681	1	1	NaN	1
mkr69.2176713	1	1	NaN	1
mkr69.397598	1	1	NaN	1
mkr69.582575	1	1	NaN	1
mkr69.740857	0.6245	0.7688	-0.0989	0.7699
mkr69.84822	0.7319	0.8452	0.24	0.8273
mkr69.976249	0.7342	0.8467	-0.1515	0.8275
mkr69.976586	1	1	NaN	1
mkr7.1075771	0.6072	0.7556	0.3705	0.7106
mkr7.1118266	1	1	NaN	1
mkr7.116486	0.9474	0.973	-0.0007	0.973
mkr7.116522	0.9474	0.973	0	0.973
mkr7.2604350	0.8976	0.946	-0.0293	0.9445
mkr7.2625922	0.8861	0.9396	-0.0346	0.9376
mkr7.3954257	0.9474	0.973	0	0.973
mkr7.3954266	0.95	0.9743	0.0007	0.9744
mkr7.4421611	1	1	NaN	1
mkr7.4421711	0.6611	0.7959	-0.2251	0.761
mkr7.5225703	0.6831	0.8117	-0.1993	0.7824
mkr7.5245707	1	1	NaN	1
mkr7.5529685	0.7733	0.8722	-0.1176	0.8593
mkr7.5730200	0.6278	0.7714	0.0628	0.7297
mkr7.5907681	1	1	NaN	1
mkr7.6295430	0.8054	0.8922	-0.0916	0.8835
mkr7.652131	0.6781	0.8082	-0.2032	0.7779
mkr7.6714679	0.95	0.9744	0	0.9744
mkr7.6781477	0.95	0.9743	0.0007	0.9744
mkr7.6822106	1	1	NaN	1
mkr7.774743	1	1	NaN	1
mkr7.9063372	1	1	NaN	1
mkr7.967062	0.7221	0.8386	-0.162	0.8173
mkr7.967103	0.7342	0.8467	-0.1515	0.8275
mkr7.9757781	0.8028	0.8906	0.4621	0.8833
mkr70.161095	1	1	NaN	1
mkr70.2036782	0.9	0.9474	1	0.9474

mkr70.2039436	1	1	NaN	1
mkr70.2176467	0.95	0.9743	0.0007	0.9744
mkr70.264614	0.9474	0.973	-0.0007	0.973
mkr70.279882	1	1	NaN	1
mkr70.463069	1	1	NaN	1
mkr71.1355563	0.9474	0.973	-0.0007	0.973
mkr71.1392891	0.9024	0.9487	-0.0256	0.9474
mkr71.1392927	0.8361	0.9107	1	0.9092
mkr71.2453154	1	1	NaN	1
mkr71.2498371	1	1	NaN	1
mkr71.3028150	1	1	NaN	1
mkr71.3083941	0.9473	0.973	0.0008	0.973
mkr71.3083949	0.8949	0.9445	0	0.9459
mkr71.709798	1	1	NaN	1
mkr71.709824	1	1	NaN	1
mkr71.8341	0.9001	0.9474	0	0.9487
mkr71.849797	1	1	NaN	1
mkr711.4266	0.8914	0.9426	-0.0002	0.944
mkr719.12757	1	1	NaN	1
mkr72.1003388	1	1	NaN	1
mkr72.1651325	1	1	NaN	1
mkr72.2002464	1	1	NaN	1
mkr72.2083513	0.6088	0.7569	0.0072	0.7092
mkr72.2090070	0.8119	0.8962	0.4648	0.8897
mkr72.2149979	0.6525	0.7897	-0.233	0.7528
mkr72.2150012	0.6781	0.8082	-0.2032	0.7779
mkr72.2731009	0.7954	0.886	-0.0968	0.8764
mkr73.2600606	0.8054	0.8922	-0.0916	0.8835
mkr73.2744889	0.8946	0.9444	-0.0001	0.9457
mkr73.3069070	0.9445	0.9715	-0.0008	0.9714
mkr73.3172535	0.8976	0.946	-0.0293	0.9445
mkr73.541585	0.9001	0.9474	0	0.9487
mkr74.1700086	1	1	NaN	1
mkr74.2002180	1	1	NaN	1
mkr74.2773758	0.8975	0.946	0	0.9473
mkr74.2785929	1	1	NaN	1
mkr74.739704	1	1	NaN	1
mkr744.545	0.8663	0.9284	1	0.9286
mkr75.1534899	0.6943	0.8195	-0.1874	0.7927
mkr75.1534921	0.6465	0.7853	-0.242	0.7465
mkr75.1577005	0.8949	0.9445	0	0.9459
mkr75.1691681	1	1	NaN	1

mkr75.1746024	0.95	0.9744	0	0.9744
mkr75.3108715	0.8425	0.9145	-0.0633	0.9096
mkr75.3142983	1	1	NaN	1
mkr75.39408	0.6465	0.7853	-0.242	0.7465
mkr75.39593	0.5944	0.7456	-0.3103	0.6911
mkr75.397315	0.7032	0.8257	0.6175	0.805
mkr75.952135	0.7627	0.8654	-0.1257	0.851
mkr75.952338	0.7323	0.8455	0.7769	0.8306
mkr76.2151896	0.95	0.9744	0	0.9744
mkr76.2833040	0.6936	0.8191	-0.1842	0.7926
mkr76.578829	0.7081	0.8291	-0.1703	0.8057
mkr76.584771	0.6905	0.8169	-0.1874	0.7898
mkr76.627088	1	1	NaN	1
mkr764.12526	1	1	NaN	1
mkr77.1009058	0.8976	0.946	-0.0293	0.9445
mkr77.1978929	0.9444	0.9714	0	0.9714
mkr77.2013045	0.9413	0.9698	-0.0023	0.9697
mkr77.2676871	0.95	0.9743	0.0007	0.9744
mkr77.852384	1	1	NaN	1
mkr771.8120	0.7088	0.8296	-0.1738	0.8058
mkr774.1627	1	1	NaN	1
mkr78.1650993	1	1	NaN	1
mkr78.2233973	0.95	0.9744	0	0.9744
mkr78.2289518	1	1	NaN	1
mkr78.2928755	0.9474	0.973	-0.0007	0.973
mkr78.3025028	0.9472	0.9729	0.0026	0.973
mkr78.325023	0.95	0.9744	0	0.9744
mkr78.325041	0.95	0.9744	0	0.9744
mkr79.1192899	0.6633	0.7976	0.4889	0.7677
mkr79.119540	0.6612	0.7961	-0.2258	0.761
mkr79.2111239	1	1	NaN	1
mkr79.2295538	0.7626	0.8653	-0.125	0.851
mkr79.2672431	1	1	NaN	1
mkr79.2672464	1	1	NaN	1
mkr79.2795339	0.9025	0.9488	-0.027	0.9474
mkr79.2863748	0.9445	0.9715	-0.0015	0.9714
mkr79.839946	1	1	NaN	1
mkr79.839951	1	1	NaN	1
mkr8.10440285	1	1	NaN	1
mkr8.10440329	1	1	NaN	1
mkr8.1816624	0.6305	0.7734	-0.2606	0.7302
mkr8.1850819	1	1	NaN	1

mkr8.1850865	1	1	NaN	1
mkr8.2995785	1	1	NaN	1
mkr8.3382587	1	1	NaN	1
mkr8.3687015	0.8136	0.8972	-0.0813	0.8898
mkr8.4146160	0.6465	0.7853	-0.242	0.7465
mkr8.426244	0.95	0.9744	0	0.9744
mkr8.4383709	1	1	NaN	1
mkr8.4600666	1	1	NaN	1
mkr8.476905	1	1	NaN	1
mkr8.4914044	1	1	NaN	1
mkr8.533330	1	1	NaN	1
mkr8.6141741	0.9474	0.973	-0.0007	0.973
mkr8.623784	1	1	NaN	1
mkr8.6918693	1	1	NaN	1
mkr8.6918698	0.7443	0.8534	0.7799	0.841
mkr8.6918800	1	1	NaN	1
mkr8.7981298	0.8097	0.8948	0.6478	0.8895
mkr8.8164924	0.8827	0.9377	1	0.9375
mkr8.8842204	0.5987	0.749	-0.2108	0.7207
mkr80.100119	0.95	0.9744	0	0.9744
mkr80.1086135	0.8887	0.9411	-0.0001	0.9426
mkr80.2061639	0.95	0.9744	0	0.9744
mkr80.2290796	0.95	0.9744	0	0.9744
mkr80.2438796	1	1	NaN	1
mkr80.2580062	1	1	NaN	1
mkr80.2719146	0.8921	0.9429	-0.0311	0.9413
mkr80.2958406	1	1	NaN	1
mkr80.2964911	0.9001	0.9474	0	0.9487
mkr80.429590	1	1	NaN	1
mkr80.683555	1	1	NaN	1
mkr80.726223	1	1	NaN	1
mkr80.917854	0.95	0.9743	0.0007	0.9744
mkr81.1151786	1	1	NaN	1
mkr81.1208612	1	1	NaN	1
mkr81.1607889	1	1	NaN	1
mkr81.1881317	0.6459	0.7849	-0.1601	0.7669
mkr81.516147	1	1	NaN	1
mkr81.516156	1	1	NaN	1
mkr81.68979	1	1	NaN	1
mkr81.738949	1	1	NaN	1
mkr82.1205886	1	1	NaN	1
mkr82.1615069	1	1	NaN	1



mkr82.1822328	0.9474	0.973	0	0.973
mkr82.1822377	0.678	0.8081	-0.2025	0.7779
mkr82.2223376	1	1	NaN	1
mkr83.1484354	1	1	NaN	1
mkr83.1876892	1	1	NaN	1
mkr83.2189683	1	1	NaN	1
mkr83.2752434	0.8502	0.919	-0.0588	0.9147
mkr83.361075	0.9474	0.973	-0.0007	0.973
mkr84.1255367	0.8503	0.9191	-0.0595	0.9147
mkr84.1673690	1	1	NaN	1
mkr84.178152	0.6248	0.7691	0.0221	0.726
mkr84.1823503	1	1	NaN	1
mkr84.2400244	0.7956	0.8862	-0.0982	0.8764
mkr84.2526567	1	1	NaN	1
mkr84.414096	1	1	NaN	1
mkr84.541826	0.95	0.9744	0	0.9744
mkr84.814645	0.9236	0.9603	-0.0065	0.96
mkr85.1190689	1	1	NaN	1
mkr85.1228749	0.5943	0.7455	-0.3097	0.691
mkr85.1231246	0.9336	0.9656	-0.0037	0.9655
mkr85.1277932	0.9473	0.9729	0.0016	0.973
mkr85.1692021	0.95	0.9744	0	0.9744
mkr85.1747922	1	1	NaN	1
mkr85.2794572	0.6781	0.8082	-0.2032	0.7779
mkr85.287973	0.7088	0.8296	-0.1738	0.8058
mkr85.304309	1	1	NaN	1
mkr85.478311	0.6248	0.7691	0.0221	0.726
mkr85.712191	0.8528	0.9206	-0.0179	0.9217
mkr85.912276	1	1	NaN	1
mkr86.1212945	0.7082	0.8292	-0.171	0.8057
mkr86.1259674	0.95	0.9744	0	0.9744
mkr86.1478524	0.8572	0.9231	-0.0549	0.9193
mkr86.1948588	1	1	NaN	1
mkr86.1960763	1	1	NaN	1
mkr86.2532107	1	1	NaN	1
mkr86.439100	0.5922	0.7439	-0.0411	0.6906
mkr86.77728	1	1	NaN	1
mkr87.1613021	0.834	0.9095	-0.069	0.9038
mkr87.1925432	0.5912	0.7431	-0.0092	0.6903
mkr87.2223571	0.9474	0.973	-0.0007	0.973
mkr87.2535251	1	1	NaN	1
mkr87.2779018	1	1	NaN	1

mkr87.464016	0.6347	0.7766	-0.2531	0.735
mkr88.1088680	0.8976	0.946	-0.0293	0.9445
mkr88.1089397	0.95	0.9744	0	0.9744
mkr88.1431733	0.9474	0.973	0	0.973
mkr88.2302395	1	1	NaN	1
mkr88.2483438	1	1	NaN	1
mkr88.2544384	0.7626	0.8653	-0.125	0.851
mkr88.487932	1	1	NaN	1
mkr88.928683	1	1	NaN	1
mkr89.1216511	0.6284	0.7718	0.4742	0.7338
mkr89.171781	0.6086	0.7567	0.589	0.7161
mkr89.1762493	1	1	NaN	1
mkr89.2721619	0.8573	0.9232	-0.0556	0.9193
mkr89.2810351	0.9474	0.973	0	0.973
mkr89.39445	0.6941	0.8194	-0.1868	0.7927
mkr89.506532	0.95	0.9743	0.0007	0.9744
mkr892.2207	1	1	NaN	1
mkr892.2326	1	1	NaN	1
mkr892.2346	1	1	NaN	1
mkr9.10175449	0.95	0.9744	0	0.9744
mkr9.1045461	1	1	NaN	1
mkr9.1345658	1	1	NaN	1
mkr9.1550348	1	1	NaN	1
mkr9.2080971	0.95	0.9743	0.0007	0.9744
mkr9.2404334	0.9474	0.973	0	0.973
mkr9.2404344	0.9474	0.973	0	0.973
mkr9.2651398	0.6611	0.7959	-0.2251	0.761
mkr9.3328967	0.6271	0.7708	-0.2667	0.7264
mkr9.4832819	0.95	0.9744	0	0.9744
mkr9.4887331	1	1	NaN	1
mkr9.4999064	1	1	NaN	1
mkr9.5247892	0.8549	0.9218	0.6545	0.9191
mkr9.52565	1	1	NaN	1
mkr9.5732160	1	1	NaN	1
mkr9.6193445	1	1	NaN	1
mkr9.6361466	1	1	NaN	1
mkr9.6705922	0.8573	0.9232	-0.0556	0.9193
mkr9.715452	0.8363	0.9109	-0.0233	0.9119
mkr9.715463	0.9498	0.9743	0.0033	0.9744
mkr9.715528	1	1	NaN	1
mkr9.7199022	1	1	NaN	1
mkr9.7548915	0.95	0.9743	0.0007	0.9744

mkr9.8853852	0.6081	0.7563	0.0095	0.709
mkr9.8982880	1	1	NaN	1
mkr9.9235364	0.6818	0.8108	0.7702	0.7886
mkr9.9277793	0.6248	0.7691	0.0221	0.726
mkr9.9738250	0.6109	0.7584	0.1593	0.7602
mkr90.1627412	1	1	NaN	1
mkr90.2251849	0.834	0.9095	-0.069	0.9038
mkr90.2267259	0.6809	0.8102	0.1503	0.782
mkr90.2267350	1	1	NaN	1
mkr90.2282629	0.95	0.9744	0	0.9744
mkr90.2768849	1	1	NaN	1
mkr90.307054	0.7241	0.84	-0.1571	0.8194
mkr90.357330	0.7087	0.8295	-0.1732	0.8057
mkr90.457907	1	1	NaN	1
mkr90.777085	1	1	NaN	1
mkr91.1205970	1	1	NaN	1
mkr91.1211712	1	1	NaN	1
mkr91.1211810	0.6128	0.7599	-0.2815	0.7118
mkr91.2534027	1	1	NaN	1
mkr91.2606426	1	1	NaN	1
mkr91.334595	1	1	NaN	1
mkr91.529343	0.9024	0.9487	-0.0263	0.9474
mkr91.665529	0.8054	0.8922	-0.0916	0.8835
mkr91.940467	1	1	NaN	1
mkr92.2038260	1	1	NaN	1
mkr92.2419071	1	1	NaN	1
mkr92.2422299	0.9445	0.9715	-0.0015	0.9714
mkr92.2473028	1	1	NaN	1
mkr92.2619127	1	1	NaN	1
mkr92.2665800	0.6969	0.8214	-0.1875	0.7948
mkr92.2671311	0.95	0.9744	0	0.9744
mkr92.2675650	0.95	0.9744	0	0.9744
mkr92.399685	1	1	NaN	1
mkr92.399754	1	1	NaN	1
mkr92.437643	1	1	NaN	1
mkr93.1214797	1	1	NaN	1
mkr93.1617848	0.95	0.9743	0.0007	0.9744
mkr93.1676745	0.9474	0.973	-0.0007	0.973
mkr93.1991175	0.9474	0.973	0	0.973
mkr93.1991227	0.8571	0.9231	-0.0541	0.9193
mkr93.809525	0.95	0.9744	0	0.9744
mkr93.809600	0.9024	0.9487	-0.0256	0.9474

mkr94.1224135	1	1	NaN	1
mkr94.1224155	1	1	NaN	1
mkr94.1388459	0.7061	0.8278	0.2259	0.8054
mkr94.154996	1	1	NaN	1
mkr94.266904	0.666	0.7995	0.14	0.7681
mkr94.893455	0.7733	0.8722	-0.1176	0.8593
mkr95.1902459	0.9024	0.9487	-0.0263	0.9474
mkr95.2325036	1	1	NaN	1
mkr95.484575	0.9025	0.9488	-0.027	0.9474
mkr95.939471	1	1	NaN	1
mkr954.206	1	1	NaN	1
mkr96.1178038	0.9474	0.973	-0.0007	0.973
mkr96.1508337	0.5937	0.745	-0.3074	0.6909
mkr96.1660600	0.95	0.9744	0	0.9744
mkr96.2609885	1	1	NaN	1
mkr96.495095	0.9474	0.973	-0.0007	0.973
mkr96.821614	1	1	NaN	1
mkr97.1416454	1	1	NaN	1
mkr97.1436084	0.9474	0.973	-0.0007	0.973
mkr97.1879575	1	1	NaN	1
mkr97.2209643	1	1	NaN	1
mkr97.2231867	0.8573	0.9232	-0.0556	0.9193
mkr97.678075	1	1	NaN	1
mkr97.722225	1	1	NaN	1
mkr98.229674	1	1	NaN	1
mkr98.2411904	0.6809	0.8102	0.1503	0.782
mkr98.2679468	0.9001	0.9474	0	0.9487
mkr98.721707	1	1	NaN	1
mkr98.767522	0.9499	0.9743	0.0015	0.9744
mkr98.767646	0.95	0.9744	0	0.9744
mkr99.1001440	0.9413	0.9697	-0.0016	0.9697
mkr99.2468548	1	1	NaN	1
mkr99.2593097	0.9474	0.973	0	0.973
mkr99.2593202	0.8573	0.9232	-0.0556	0.9193
mkr99.340749	0.9236	0.9603	-0.0072	0.96
mkr99.34892	0.95	0.9744	0	0.9744
mkr99.732034	1	1	NaN	1
mkr99.891964	1	1	NaN	1

Table S2. Genetic linkage map for the LFxTRC F<sub>2</sub> cross. Marker names correspond to physical position on the *M. zebra* genome - e.g., c176.413902 refers to a SNP at 413,902bps on scaffold 176.

<b>Marker</b>	<b>LG</b>	<b>cM</b>
c176.413902	1	0.00
c118.872248	1	6.45
c242.326181	1	7.28
c183.979177	1	7.78
c118.2170572	1	8.34
c118.2192593	1	8.53
c269.94077	1	8.70
c201.101644	1	9.10
c118.848647	1	10.63
c53.1793971	1	13.12
c53.689240	1	14.51
c7.6781477	1	24.63
c7.6295430	1	26.25
c7.5245707	1	29.40
c7.4421711	1	30.85
c7.3954257	1	33.03
c7.1118266	1	38.80
c7.967062	1	39.95
c7.247636	1	41.34
c7.116522	1	42.43
c2.6496237	1	55.91
c2.8547835	1	59.04
c2.11310365	1	63.32
c2.13257442	1	64.51
c2.13440188	1	64.60
c2.14535182	1	65.94
c2.14347389	1	66.20
c111.723082	1	67.11
c111.475213	1	67.30
c111.1446492	1	67.45
c2.14709506	1	67.88
c111.1265773	1	67.88
c111.1183548	1	68.53
c111.1108258	1	68.53
c111.1396077	1	69.25
c111.276283	1	69.25
c376.137341	1	69.59
c111.673317	1	69.59

c111.841535	1	70.51
c111.801372	1	71.01
c111.1714442	1	72.20
c121.541222	2	0.00
c121.263466	2	0.28
c121.236841	2	0.28
c121.761167	2	0.65
c121.1349034	2	1.40
c121.1981945	2	1.40
c34.1374429	2	3.17
c185.1009272	2	8.12
c29.417650	2	8.74
c29.495144	2	8.74
c29.1933214	2	9.87
c29.1422968	2	10.62
c29.3798479	2	11.29
c91.940467	2	12.53
c29.5049077	2	13.05
c91.1205970	2	13.11
c91.2606426	2	13.11
c91.2534027	2	13.35
c29.4252059	2	13.77
c29.3843418	2	13.77
c91.323585	2	14.76
c87.2535251	2	20.66
c87.2223571	2	21.47
c4.4762465	2	24.23
c4.4491611	2	24.83
c4.4449231	2	25.46
c4.3870733	2	26.72
c4.2197934	2	33.77
c4.1613340	2	35.18
c4.763972	2	36.86
c198.426720	2	39.98
c198.760162	2	41.64
c11.1860811	2	44.14
c11.2274731	2	46.25
c11.4650925	2	48.96
c11.4108123	2	49.71
c11.4017683	2	50.53
c11.8641264	2	52.68
c126.106602	3	0.00

c401.125020	3	2.09
c401.23855	3	8.21
c126.40052	3	8.87
c126.884983	3	9.40
c126.1258056	3	10.22
c126.1195706	3	10.88
c209.450133	3	14.98
c37.1032298	3	21.74
c37.1533667	3	23.50
c83.2752434	3	34.57
c83.2189683	3	37.34
c83.1876892	3	37.59
c83.361075	3	43.51
c176.1066491	3	45.54
c176.765268	3	46.74
c260.244333	3	48.57
c260.72995	3	48.57
c176.107540	3	48.93
c260.187819	3	49.51
c90.2267350	3	52.07
c90.2768849	3	53.27
c339.88600	3	54.69
c339.46552	3	54.96
c71.3083949	3	56.92
c71.3028150	3	57.17
c327.298291	3	60.84
c277.153938	3	60.84
c212.867973	3	61.39
c277.177680	3	62.74
c46.1956853	4	0.00
c46.3109816	4	1.19
c46.3431602	4	2.62
c46.2805463	4	3.29
c46.2740192	4	4.29
c46.2937800	4	5.07
c46.3696681	4	5.26
c3242.427	4	5.92
c46.1475566	4	6.39
c46.2485898	4	6.72
c46.1727345	4	7.27
c46.1034573	4	7.67
c46.746061	4	8.04

c1182.130	4	9.63
c28.6518363	4	10.29
c28.5875859	4	10.88
c28.3649848	4	13.99
c28.2867294	4	14.92
c28.3287342	4	15.72
c28.1739822	4	17.37
c28.1254555	4	19.94
c28.917083	4	21.15
c28.74404	4	24.60
c61.3236042	4	25.00
c55.185928	4	33.25
c55.1047278	4	33.73
c55.2865395	4	37.75
c254.62143	4	39.29
c68.1322642	4	43.57
c68.1337477	4	43.57
c85.1747922	4	53.89
c85.1231246	4	54.65
c85.1190689	4	55.06
c85.912276	4	55.81
c144.1593204	4	56.64
c218.404880	4	56.90
c85.304309	4	57.40
c144.1137020	4	57.87
c399.125168	4	59.61
c170.1264595	4	60.29
c399.80889	4	60.96
c218.684867	4	62.02
c58.2592987	5	0.00
c58.3313327	5	0.28
c58.1581648	5	0.54
c58.762343	5	0.73
c58.2468148	5	0.78
c15.7408194	5	10.95
c58.616274	5	12.69
c58.961373	5	13.51
c58.3232505	5	13.51
c58.2516712	5	13.87
c15.4347678	5	15.46
c15.6534150	5	15.46
c15.6910019	5	16.09



c15.7292725	5	16.40
c15.7751170	5	16.40
c58.3664416	5	16.59
c58.335065	5	17.15
c58.418861	5	17.15
c58.56160	5	17.15
c58.1211818	5	17.66
c58.103618	5	18.04
c58.165782	5	18.17
c58.3591142	5	18.70
c58.1097399	5	19.30
c15.3605310	5	23.55
c15.2509619	5	24.33
c18.5133866	5	31.47
c18.4535886	5	32.57
c18.4850202	5	33.05
c18.4038452	5	34.85
c18.1911839	5	40.37
c10.3750117	5	50.90
c10.4181606	5	52.60
c10.6870455	5	60.38
c10.8577966	5	62.92
c10.8956479	5	63.77
c273.227287	5	64.75
c273.553359	5	65.51
c202.464633	5	66.18
c130.1262569	5	69.19
c63.2190175	5	71.08
c191.744332	5	71.46
c63.2320816	5	71.77
c63.1799720	5	72.44
c63.1367818	5	73.22
c208.213442	5	75.24
c1.3066840	6	0.00
c1.3052167	6	0.08
c1.4667697	6	0.39
c1.5258772	6	0.66
c1.1573715	6	0.66
c267.291298	6	1.00
c267.232348	6	1.00
c1.2443647	6	1.33
c267.526200	6	1.52

c267.190153	6	1.52
c267.241466	6	1.52
c1.351080	6	2.07
c517.60293	6	2.07
c1.229937	6	2.51
c1.373004	6	3.17
c267.174228	6	3.91
c267.71183	6	4.14
c267.480796	6	5.26
c1.6031297	6	6.15
c1.8682937	6	10.22
c1.9086673	6	10.83
c1.9514500	6	11.29
c1.11505120	6	13.44
c1.12449379	6	15.15
c1.12706277	6	15.40
c1.13554615	6	17.05
c1.13908978	6	18.00
c1.14802276	6	19.84
c1.15055852	6	20.64
c97.1416454	6	27.31
c97.2231867	6	29.37
c20.3505382	6	40.71
c20.3374827	6	42.10
c20.3463531	6	42.28
c20.1015081	6	47.15
c20.1150236	6	47.61
c20.1074039	6	49.02
c20.526888	6	50.89
c140.1285494	6	52.29
c289.77171	6	56.27
c80.429590	6	57.82
c200.53324	6	58.45
c200.799640	6	59.33
c150.1455638	6	59.56
c187.449360	6	60.19
c200.856936	6	60.19
c80.100119	6	60.69
c80.2061639	6	61.25
c80.2290796	6	61.38
c214.463068	6	61.38
c80.2958406	6	61.38

c220.155160	6	61.57
c214.355176	6	61.57
c214.677554	6	62.09
c220.741458	6	62.09
c80.683555	6	62.37
c80.917854	6	62.96
c80.1086135	6	64.39
c1302.680	7	0.00
c193.987462	7	5.39
c222.782479	7	5.62
c193.692577	7	6.67
c193.1053642	7	6.78
c193.525564	7	7.31
c222.602115	7	7.31
c261.233122	7	7.49
c193.863517	7	7.49
c380.137971	7	7.49
c222.643136	7	7.87
c193.724877	7	7.87
c764.12526	7	7.87
c261.337724	7	7.87
c193.69558	7	8.03
c363.116741	7	8.03
c193.268450	7	8.03
c222.317699	7	8.03
c363.99662	7	8.28
c115.1207193	7	9.50
c115.291751	7	9.72
c115.713052	7	9.72
c155.294078	7	9.90
c115.1767806	7	9.90
c155.1520985	7	10.38
c100.563038	7	12.93
c124.1667602	7	14.65
c21.5242487	7	19.06
c21.4568542	7	19.66
c21.2195347	7	24.74
c0.5071706	7	33.65
c0.7061265	7	36.31
c0.8989175	7	39.35
c0.12844052	7	42.85
c0.14345619	7	43.72

c0.15218636	7	44.00
c0.17182901	7	45.35
c0.17575903	7	45.64
c77.2676871	7	46.27
c0.18725296	7	46.56
c77.2013045	7	48.56
c77.852384	7	48.56
c45.78615	7	49.63
c592.37147	7	49.83
c45.129073	7	49.99
c45.384983	7	50.14
c45.3822407	7	52.91
c99.1001440	7	54.04
c99.732034	7	54.04
c93.1991175	7	57.91
c93.1617848	7	58.53
c93.1214797	7	60.07
c134.1691066	7	62.31
c32.96945	7	68.72
c321.67545	7	68.83
c32.997106	7	69.18
c32.480568	7	69.18
c32.588851	7	69.67
c32.1479523	7	71.44
c32.2151495	7	72.99
c32.2551051	7	73.15
c32.2656168	7	73.33
c32.3471997	7	73.33
c89.778084	7	79.51
c89.2810351	7	80.65
c32.5715629	7	80.97
c89.2721619	7	82.31
c89.506532	7	83.20
c89.1762493	7	83.20
c89.39445	7	83.69
c139.1512150	7	84.82
c152.263656	7	85.10
c139.1113473	7	85.10
c152.965466	7	85.10
c152.149395	7	85.20
c89.171781	7	86.22
c106.2225648	8	0.00

c106.960449	8	1.00
c106.1955076	8	1.70
c106.1012963	8	2.26
c106.979373	8	2.74
c106.1399010	8	2.74
c106.958209	8	2.74
c106.1809812	8	2.93
c106.2056114	8	3.35
c106.732973	8	4.12
c106.654872	8	4.41
c106.195850	8	5.17
c113.1256930	8	7.30
c113.1027945	8	7.48
c113.1078023	8	7.48
c113.191603	8	9.36
c47.3312799	8	11.34
c47.718092	8	15.39
c47.177665	8	16.39
c132.348543	8	30.62
c132.627024	8	32.16
c190.910676	8	38.72
c190.934937	8	38.88
c81.1607889	8	46.60
c81.1208612	8	47.83
c81.738949	8	48.39
c81.516147	8	49.15
c159.85245	8	56.92
c159.550743	8	57.38
c159.654801	8	57.70
c171.303063	8	60.99
c142.1407017	9	0.00
c211.558189	9	2.38
c633.16114	9	2.92
c253.360999	9	3.14
c157.316235	9	8.40
c157.574609	9	8.59
c157.586784	9	9.17
c13.1631145	9	13.69
c13.3659624	9	18.78
c13.3714129	9	19.32
c13.5636012	9	26.49
c13.6386857	9	28.05

c13.7779905	9	33.19
c13.8441477	9	35.06
c27.3981126	9	47.93
c27.4205615	9	48.71
c386.74434	9	52.08
c27.487981	9	53.09
c228.251373	9	55.67
c230.197486	9	56.12
c177.537945	9	56.68
c177.317559	9	56.94
c177.880089	9	56.94
c177.620048	9	57.13
c177.914961	9	57.13
c177.83871	9	57.51
c230.735168	9	58.48
c230.322809	9	58.57
c22.2628020	10a	0.00
c22.3323932	10a	0.12
c22.3944791	10a	1.37
c22.4015123	10a	1.78
c22.4477242	10a	2.59
c22.6622454	10a	7.23
c76.578829	10a	8.60
c76.2151896	10a	11.68
c25.1963261	10a	18.58
c25.840042	10a	21.55
c48.1674459	10a	23.98
c48.1773675	10a	25.03
c48.2013983	10a	25.44
c48.1847962	10a	25.65
c48.1911270	10a	25.65
c48.3062376	10a	26.39
c48.3800164	10a	26.58
c48.2559819	10a	26.75
c48.3226245	10a	26.75
c48.751108	10a	28.55
c48.17981	10a	28.55
c48.441883	10a	29.13
c48.972966	10a	30.48
c25.61537	10a	31.80
c94.1388459	10b	0.00
c94.1628475	10b	1.44

c94.1224135	10b	2.97
c131.57821	10b	14.27
c311.330558	10b	15.00
c75.397315	10b	15.27
c131.1115228	10b	15.27
c75.1746024	10b	16.78
c75.3108715	10b	16.95
c75.1691681	10b	17.48
c50.3773664	10b	19.30
c50.3479555	10b	19.63
c50.2376745	10b	21.09
c249.305594	11	0.00
c249.209454	11	0.28
c143.1548276	11	0.62
c143.1413477	11	0.81
c207.409342	11	1.14
c66.2963730	11	1.53
c66.2410294	11	1.82
c66.749462	11	3.23
c66.2010471	11	3.59
c24.6391865	11	3.59
c24.5786366	11	4.61
c24.5476147	11	6.00
c24.4409149	11	7.67
c24.1498644	11	14.13
c24.869308	11	15.79
c4.5194468	11	18.45
c4.6484708	11	22.00
c4.6921427	11	27.19
c105.2327575	11	49.50
c64.121077	11	51.18
c64.2440212	11	51.79
c196.631070	11	53.00
c196.269495	11	53.20
c64.3024594	11	53.50
c196.1018121	11	53.81
c189.295714	11	54.03
c151.1461990	11	54.03
c105.1526206	11	58.15
c105.283835	11	61.08
c137.1666100	11	63.49
c137.1055183	11	63.49

c123.1856536	11	66.08
c123.288361	11	68.51
c4.11531224	11	70.04
c4.10326095	11	72.55
c4.9779402	11	73.45
c24.2241099	11	94.69
c207.450361	11	105.07
c184.9322	11	105.69
c207.166589	11	106.04
c207.366665	11	106.23
c184.784426	11	106.23
c207.226853	11	106.23
c184.376809	11	106.23
c184.113499	11	106.23
c207.271793	11	106.23
c184.175006	11	106.60
c184.46077	11	106.60
c184.555215	11	106.60
c56.3640997	12	0.00
c56.3795734	12	0.19
c128.417935	12	1.54
c56.73579	12	2.15
c56.1032443	12	2.15
c128.921623	12	2.71
c128.798952	12	3.08
c128.1538240	12	4.63
c112.508797	12	5.52
c275.173698	12	6.43
c275.173724	12	6.43
c9.52565	12	7.26
c9.715528	12	7.70
c9.1045461	12	8.63
c9.1550348	12	8.79
c9.2080971	12	9.22
c9.3328967	12	11.69
c9.4123992	12	13.91
c9.4999064	12	15.93
c9.4832819	12	16.82
c9.5732160	12	18.81
c9.6193445	12	19.01
c9.6361466	12	19.77
c9.7199022	12	21.37



c9.7406283	12	22.58
c9.9277793	12	27.82
c14.6883973	12	33.93
c14.2368660	12	47.09
c14.1232448	12	49.93
c122.1805593	12	51.97
c43.3740431	12	53.25
c43.4282131	12	53.71
c43.3112192	12	54.18
c43.1093337	12	55.72
c334.32851	12	57.14
c197.143069	12	57.66
c197.678856	12	57.66
c26.2061138	13a	0.00
c26.2904773	13a	0.26
c26.2173503	13a	0.77
c44.2763411	13a	23.98
c44.3129525	13a	25.32
c44.3044568	13a	25.55
c62.3129666	13a	31.18
c62.2721053	13a	32.43
c62.1648691	13a	35.75
c38.302681	13a	37.40
c38.1591063	13a	38.50
c38.608518	13a	38.68
c38.2111260	13a	39.83
c38.2348122	13a	40.58
c38.2529240	13a	40.96
c38.4947770	13a	41.64
c38.4347834	13a	42.07
c38.4996752	13a	43.01
c38.4822818	13a	43.01
c38.4329266	13a	43.77
c38.3098970	13a	45.03
c26.1362137	13b	0.00
c26.802414	13b	2.50
c26.117534	13b	5.08
c165.764309	13b	6.27
c165.663394	13b	6.27
c165.782176	13b	6.66
c378.88823	13b	11.69
c332.343815	13b	13.17

c332.103334	13b	13.39
c258.42397	13b	14.15
c217.472692	13b	14.15
c258.593310	13b	14.41
c378.205232	13b	14.83
c174.406531	13b	15.09
c378.218014	13b	15.24
c378.153639	13b	15.42
c174.239994	13b	15.75
c33.4451453	13b	17.23
c103.1698424	14	0.00
c103.1440300	14	1.30
c103.903069	14	1.65
c272.486229	14	1.87
c103.879554	14	2.22
c219.609639	14	2.50
c272.370532	14	2.78
c352.172633	14	2.97
c103.950342	14	3.03
c103.514274	14	3.03
c103.397897	14	3.27
c103.312831	14	3.27
c103.427188	14	3.65
c103.119969	14	3.65
c219.154502	14	3.65
c103.768628	14	3.90
c158.620001	14	5.29
c67.85458	14	6.53
c67.944408	14	7.16
c67.2910953	14	9.81
c67.2877725	14	10.23
c54.3551926	14	11.04
c54.3625582	14	11.23
c54.3306346	14	11.87
c8.533330	14	16.85
c8.476905	14	16.85
c8.1850865	14	19.17
c8.3563172	14	24.35
c8.5000737	14	27.75
c8.4914044	14	28.29
c8.6918698	14	34.56
c8.6141741	14	34.85

c8.7656076	14	38.26
c125.302576	14	50.45
c125.1904299	14	51.21
c84.178152	14	52.04
c84.1673690	14	54.26
c84.1823503	14	54.26
c216.536016	14	55.97
c0.3426417	14	56.93
c225.417828	14	56.93
c0.2582514	14	57.31
c0.1325166	14	57.67
c0.358525	14	57.67
c84.2526567	14	58.14
c225.600890	14	59.34
c0.1839752	14	60.29
c5.11506904	15	0.00
c5.11598727	15	0.39
c5.10949892	15	1.28
c5.10531264	15	1.47
c5.10544702	15	1.47
c5.10123596	15	2.02
c5.7621500	15	5.01
c5.3628458	15	12.01
c5.2188607	15	14.62
c5.1053255	15	16.27
c5.897770	15	18.11
c146.88596	15	26.84
c23.526752	15	29.94
c23.725455	15	30.91
c23.1502215	15	34.00
c23.2244807	15	36.25
c23.5084661	15	42.86
c141.717891	15	49.30
c71.8341	15	49.87
c71.2203217	15	50.42
c71.1392891	15	50.42
c71.2498371	15	50.99
c71.2453154	15	50.99
c227.140520	15	51.18
c227.470495	15	51.18
c252.364678	15	51.18
c227.318668	15	51.51

c252.371886	15	51.51
c116.2264444	15	52.19
c227.629583	15	52.19
c711.4266	15	52.58
c252.399910	15	52.58
c116.1492109	15	54.27
c116.622790	15	54.46
c101.1308428	15	54.63
c78.1650993	15	55.77
c78.2928755	15	55.96
c78.2233973	15	55.96
c101.2583528	15	57.21
c282.468875	15	57.66
c282.305424	15	58.09
c78.2289518	15	58.75
c101.2318917	15	59.48
c74.464726	15	61.61
c74.1700086	15	62.40
c74.2002180	15	63.83
c203.264364	16	0.00
c203.433118	16	1.28
c194.724627	16	2.42
c194.38402	16	2.72
c149.749122	16	3.57
c149.1197825	16	3.79
c233.480098	16	5.15
c233.570638	16	5.15
c232.426604	16	9.50
c136.317137	16	9.89
c117.69559	16	10.41
c161.42395	16	10.41
c232.149836	16	10.58
c161.393289	16	11.49
c161.1087673	16	11.71
c161.649535	16	12.23
c25.3924423	16	16.59
c25.5762978	16	22.58
c52.3743243	16	24.14
c52.2131378	16	27.53
c52.2028519	16	29.03
c52.904299	16	32.12
c42.1183857	16	38.63

c42.1772644	16	40.13
c86.1495785	16	50.27
c86.1478524	16	50.27
c86.1948588	16	51.62
c86.77728	16	52.84
c59.162629	16	53.49
c114.699648	16	55.98
c59.2271395	16	55.98
c59.1052252	16	57.41
c59.3219508	16	57.98
c114.1602092	16	59.17
c284.235598	16	60.04
c284.70531	16	60.25
c114.2162757	16	60.25
c358.218506	16	60.63
c114.2315433	16	60.82
c284.499949	16	60.82
c179.14604	17	0.00
c328.254502	17	0.44
c452.37855	17	0.93
c328.180836	17	1.19
c179.323859	17	1.57
c179.50706	17	1.57
c179.430578	17	1.57
c179.73942	17	1.57
c179.753768	17	1.57
c79.2863748	17	3.30
c79.2795339	17	3.67
c79.2672431	17	5.03
c79.2295538	17	7.40
c79.839946	17	7.86
c129.1164946	17	11.14
c129.349327	17	11.58
c154.1486002	17	14.18
c154.63018	17	18.08
c102.1562998	17	20.53
c102.2092170	17	21.23
c102.2179904	17	21.39
c102.1157010	17	21.61
c102.979529	17	22.63
c102.105429	17	22.88
c119.1566939	17	23.34

c119.1592583	17	23.53
c102.859476	17	23.96
c119.206524	17	26.11
c163.97009	17	27.43
c163.824742	17	28.04
c255.535692	17	29.67
c17.6824745	17	31.71
c255.145939	17	32.46
c17.6667332	17	33.59
c17.3331825	17	41.56
c17.2683496	17	43.87
c17.1307673	17	47.29
c17.1039358	17	48.96
c69.2176681	17	53.67
c69.976586	17	55.93
c69.582575	17	56.13
c69.207005	17	56.32
c69.84822	17	56.57
c35.5106080	17	57.07
c35.4453004	17	57.44
c35.4032477	17	57.44
c35.3072993	17	58.75
c35.2846676	17	58.75
c35.389880	17	59.71
c35.187861	17	60.44
c35.1660426	17	60.44
c35.960460	17	60.80
c35.1080179	17	60.80
c35.288320	17	60.80
c235.174220	17	61.43
c235.357273	17	61.94
c235.665471	17	63.13
c35.142159	17	64.98
c109.46112	18	0.00
c215.432511	18	1.54
c156.792769	18	2.31
c215.713627	18	2.32
c298.303102	18	2.51
c368.126357	18	2.70
c248.79966	18	2.70
c291.199767	18	3.49
c291.125728	18	3.49

c109.2314746	18	6.75
c41.248320	18	7.62
c41.2756600	18	12.83
c6.9719709	18	18.58
c6.9610135	18	19.52
c6.4755229	18	29.71
c6.4626408	18	31.02
c6.3324274	18	33.31
c6.2501428	18	36.01
c6.2366313	18	36.71
c6.2183722	18	37.84
c6.1621678	18	39.83
c6.553730	18	42.03
c173.1228639	18	44.31
c173.140530	18	47.68
c127.2095058	18	51.64
c326.236274	18	54.78
c326.365303	18	55.15
c326.108181	18	55.15
c231.108225	18	55.52
c107.63323	18	56.09
c104.2533690	18	56.83
c265.270501	18	58.93
c96.185530	19	0.00
c96.1660600	19	0.39
c96.821614	19	0.91
c96.495095	19	0.91
c39.1628160	19	2.52
c162.956970	19	6.38
c162.290035	19	6.65
c162.1278520	19	7.03
c39.4871541	19	7.11
c39.4456156	19	7.39
c162.268654	19	7.77
c162.1185149	19	8.10
c162.91053	19	8.23
c120.324755	19	10.35
c120.1764231	19	13.39
c120.2095492	19	14.97
c60.3623148	19	16.54
c60.3518368	19	17.29
c60.1756320	19	21.57

c3.2777527	19	32.14
c3.2598256	19	32.99
c3.5383062	19	39.95
c3.6074543	19	42.08
c3.6254422	19	43.70
c3.7270882	19	44.83
c3.8607270	19	45.95
c3.9947178	19	49.10
c3.11373809	19	50.38
c3.12216193	19	51.84
c3.12245187	19	52.47
c12.6681058	20	0.00
c12.8352875	20	2.52
c65.3409293	20	4.43
c65.2569667	20	5.28
c133.901955	20	17.22
c133.1498314	20	25.20
c133.1517469	20	25.85
c133.1691350	20	26.51
c240.276728	20	27.58
c240.104056	20	27.99
c133.1214284	20	28.21
c65.259032	20	30.31
c65.341179	20	30.77
c65.1912938	20	35.21
c65.1871866	20	35.40
c12.7181313	20	41.83
c12.6118322	20	44.48
c12.4350566	20	51.09
c12.2435698	20	61.03
c180.85087	20	67.13
c12.1169539	20	67.90
c349.25045	20	68.42
c12.535959	20	69.51
c108.1174693	20	71.23
c108.893801	20	71.43
c164.758643	20	72.00
c164.1188740	20	72.00
c164.969127	20	72.20
c164.1002795	20	72.51
c224.387080	20	74.31
c224.619455	20	74.50



c341.214005	20	75.08
c181.1152942	20	77.07
c181.1152863	20	77.31
c36.2855869	20	85.62
c36.3001036	20	87.54
c57.50901	20	91.64
c57.144379	20	92.13
c57.756810	20	93.83
c57.1869747	20	94.61
c57.1376162	20	95.04
c57.2440332	20	96.08
c57.2736955	20	96.44
c57.3236696	20	96.78
c168.876142	21	0.00
c168.730099	21	0.21
c168.5735	21	1.20
c40.4488591	21	2.37
c40.4283073	21	3.29
c40.2938997	21	4.66
c40.2358407	21	4.66
c40.3022819	21	4.89
c40.3830869	21	5.41
c40.3266945	21	5.41
c40.474302	21	10.47
c49.4071436	21	12.93
c49.3492002	21	15.36
c49.1488593	21	18.57
c49.1116440	21	19.01
c49.273340	21	22.13
c49.173490	21	22.39
c49.28496	21	23.03
c49.381280	21	23.80
c31.1672513	21	29.01
c31.2946476	21	32.40
c31.3029619	21	33.01
c238.187375	21	40.99
c110.1413215	21	42.22
c110.1751283	21	42.81
c238.273505	21	42.97
c82.1205886	21	43.92
c82.2223376	21	44.30
c82.1822328	21	44.73

c88.517263	21	46.67
c337.215118	21	46.67
c88.1088680	21	47.99
c88.2302395	21	48.52
c88.2483438	21	48.92
c88.1431733	21	49.30
c88.928683	21	49.52
c188.964104	21	50.52
c188.777573	21	50.69
c188.78098	21	50.92
c241.189666	21	52.75
c241.12159	21	53.18
c30.4120609	21	55.96
c30.5469598	21	56.71
c30.5310411	21	57.08
c30.6098430	21	58.55
c250.317164	21	59.73
c259.89154	21	59.98
c95.35541	21	61.22
c210.488716	22	0.00
c210.72804	22	0.17
c210.678976	22	0.56
c307.157379	22	1.10
c314.181610	22	1.98
c314.153029	22	2.19
c276.283073	22	3.73
c276.278368	22	4.10
c160.277522	22	4.31
c276.521616	22	4.73
c221.357981	22	6.06
c223.388593	22	7.57
c223.770979	22	8.08
c153.856555	22	10.43
c153.474734	22	11.05
c153.102606	22	12.35
c19.673603	22	13.35
c19.371691	22	13.47
c19.1976816	22	16.14
c19.2295722	22	17.17
c19.2793662	22	18.60
c19.3607860	22	21.73
c19.4625350	22	23.22

c19.4408724	22	24.39
c19.7047424	22	30.99
c16.7276763	22	33.19
c16.4535793	22	44.99
c16.3622993	22	47.62
c16.1886033	22	49.78
c16.313778	22	50.15
c16.1217679	22	50.15
c281.336610	22	51.56
c281.418560	22	51.56
c98.2679468	22	51.80
c98.2376212	22	53.16
c98.2411904	22	53.16
c98.1470248	22	54.65
c98.632783	22	55.32
c98.767646	22	55.57
c98.721707	22	55.57
c92.2473028	22	56.57
c98.229674	22	56.57
c92.2038260	22	56.57
c92.399685	22	56.95
c70.463069	22	56.95
c70.264614	22	57.14
c70.3130098	22	57.38
c251.251362	22	57.93
c92.2675650	22	59.54

Table S3. Xanthophore-based color QTL interval for the *pax3a* locus on LG18

QTL interval for R-Y flank color:		
Marker (scaffold.Mb)	LG	cM
c6.9610135	18	19.52
c6.4755229	18	29.71
c6.4626408	18	31.02
c6.3324274	18	33.31
c6.2501428	18	36.01
c6.2366313	18	36.71
c6.2183722	18	37.84
c6.1621678	18	39.83
c6.553730	18	42.03
c173.1228639	18	44.31
c173.140530	18	47.68

Genome scan for loci with $F_{ST} > 0.58$ :		
Marker (scaffold.Mb)	$F_{ST}$	locus*
mkr6.9610135	1.000	5', pituitary adenylate cyclase activating polypeptide receptor 1A ( <i>pacap1a</i> )
mkr6.9116267	0.941	3', KISS1 receptor a ( <i>kiss1ra</i> )
mkr6.7333505	0.947	intronic, interferon regulatory factor 4a ( <i>irf4a</i> )
mkr6.6094544	0.805	5', potassium channel tetramerisation domain containing 1 ( <i>kctd1</i> )
mkr6.4874331	0.895	3', Sin3A-associated protein a ( <i>sap130a</i> )
mkr6.4465297	1.000	5', eukaryotic translation initiation factor 2B subunit 3 gamma ( <i>eif2b3</i> )
<b>mkr6.3446185</b>	<b>1.000</b>	<b>5' UTR, paired box 3a (<i>pax3a</i>)</b>
mkr6.2501428	0.900	3', phosphodiesterase 4D interacting protein ( <i>PDE4DIP/3</i> )
mkr6.2421590	1.000	intronic, neurocan a ( <i>ncana</i> )
mkr6.2366313	0.947	intronic, neurocan a ( <i>ncana</i> )
mkr6.2183722	1.000	intronic, hyperpolarization activated cyclic nucleotide-gated potassium channel 2b ( <i>hcn2b</i> )
mkr6.1621678	0.950	exonic, protein tyrosine phosphatase receptor type s b ( <i>ptprsb</i> )
mkr6.904096	1.000	intronic, calsyntenin 2 ( <i>clstn2</i> )
mkr6.905417	0.903	intronic, calsyntenin 2 ( <i>clstn2</i> )
mkr6.553730	0.857	exonic, interferon gamma inducible protein 30 ( <i>ifi30</i> )
mkr173.1228639	1.000	intronic, growth arrest and DNA-damage-inducible alpha a ( <i>gadd45aa</i> )
mkr173.140530	1.000	5', zinc finger and BTB domain containing 41 ( <i>ZBTB41</i> )

\* Gene names based on homolog to zebrafish entrez genes

Table S4. Dorsal fin melanocyte-based color QTL interval on LG18

**QTL interval for R-Y flank color:**

Marker (scaffold.Mb)	LG	cM
c109.46112	18	0.00
c215.432511	18	1.54
c156.792769	18	2.31
c215.713627	18	2.32
c298.303102	18	2.51
c368.126357	18	2.70
c248.79966	18	2.70
c291.199767	18	3.49
c291.125728	18	3.49
c20.loc5	18	5.00
c109.2314746	18	6.75
c41.248320	18	7.62
c20.loc10	18	10.00
c41.2756600	18	12.83

**Genome scan for loci with  $F_{ST} > 0.58$ :**

Marker (scaffold.Mb)	$F_{ST}$	locus*
mkr109.1542895	0.950	intronic, arylsulfatase I-like ( <i>Maylandia zebra</i> )
mkr109.1927103	0.650	intronic, Rho GTPase activating protein 12b ( <i>Maylandia zebra</i> )
mkr109.2129748	1.000	5', contactin-associated protein-like 4-like ( <i>Maylandia zebra</i> )
<b>mkr109.2314746</b>	<b>0.950</b>	<b>intronic, zinc finger E-box binding homeobox 1a (<i>zeb1a</i>)</b>
mkr156.424817	1.000	intronic, myosin X ( <i>myo10</i> )
mkr156.525366	0.950	intronic, brain abundant membrane attached signal protein 1 ( <i>basp1</i> )
mkr156.792769	1.000	5', EFR3 homolog A-like ( <i>Maylandia zebra</i> )
mkr156.832127	1.000	5', EFR3 homolog A-like ( <i>Maylandia zebra</i> )
mkr156.834315	0.814	5', EFR3 homolog A-like ( <i>Maylandia zebra</i> )
mkr215.432511	0.947	exonic, anion exchange protein 2-like ( <i>Maylandia zebra</i> )
mkr215.713627	0.898	5', chromosome 7 open reading frame 25 ( <i>C2H7orf25</i> )
mkr298.303033	1.000	exonic, zinc finger protein with KRAB and SCAN domains 7-like ( <i>Maylandia zebra</i> )
mkr298.303102	1.000	exonic, zinc finger protein with KRAB and SCAN domains 7-like ( <i>Maylandia zebra</i> )
mkr368.89586	0.898	5', SCAN domain-containing protein 2-like ( <i>sdcp2l</i> )
mkr368.131125	1.000	intronic, prohibitin-2-like ( <i>phb2l</i> )
mkr368.134659	0.717	5', retrotransposon Rex3a reverse transcriptase (RT) pseudogene ( <i>Xiphophorus maculatus</i> )
mkr368.171494	1.000	3', retrotransposon Rex3a reverse transcriptase (RT) pseudogene ( <i>Xiphophorus maculatus</i> )
mkr248.79966	1.000	5', discs large (Drosophila) homolog 1 like ( <i>dlg1l</i> )
mkr248.366607	1.000	5', DEAH (Asp-Glu-Ala-His) box polypeptide 9 ( <i>dhx9</i> )
mkr291.125728	1.000	exonic, GTP binding protein 4 ( <i>gtpbp4</i> )
mkr291.199767	1.000	3', La ribonucleoprotein domain family member 4B ( <i>larp4b</i> )
mkr291.202434	0.606	3', La ribonucleoprotein domain family member 4B ( <i>larp4b</i> )
mkr291.284082	0.758	5', disco-interacting protein 2 homolog C-like ( <i>dip2c</i> )
mkr291.363685	0.706	intronic, disco-interacting protein 2 homolog C-like ( <i>dip2c</i> )
mkr41.248320	1.000	3', Rho guanine nucleotide exchange factor (GEF) 1b ( <i>arhgef1b</i> )
mkr41.248454	0.950	3', Rho guanine nucleotide exchange factor (GEF) 1b ( <i>arhgef1b</i> )
mkr41.998350	0.830	3', methyltransferase like 17 ( <i>mettl17</i> )
mkr41.1245393	0.903	3', GLIS family zinc finger 1a ( <i>glis1a</i> )
mkr41.2756600	1.000	5', protein tyrosine phosphatase, receptor type, M, a ( <i>ptprma</i> )

\* Gene names based on homolog to zebrafish entrez genes (unless indicated otherwise)

Table S5. Xanthophore-based flank color QTL interval on LG14

**QTL interval for R-Y flank color:**

Marker (scaffold.Mb)	LG	cM
c8.7656076	14	38.263786
c125.302576	14	50.454291
c125.1904299	14	51.205853
c84.178152	14	52.039222
c84.1673690	14	54.258299
c84.1823503	14	54.258299
c216.536016	14	55.970931
c0.3426417	14	56.932689
c225.417828	14	56.932689
c0.2582514	14	57.313227
c0.1325166	14	57.669532
c0.358525	14	57.669532
c84.2526567	14	58.142395

**Genome scan for loci with  $F_{ST} > 0.580$ :**

Marker (scaffold.Mb)	$F_{ST}$	locus*
mkr8.6918693	1	3', Yip1 interacting factor homolog B ( <i>S. cerevisiae</i> ) ( <i>yif1b</i> )
mkr8.6918698	0.7443	3', Yip1 interacting factor homolog B ( <i>S. cerevisiae</i> ) ( <i>yif1b</i> )
mkr8.6918800	1	3', Yip1 interacting factor homolog B ( <i>S. cerevisiae</i> ) ( <i>yif1b</i> )
mkr8.7981298	0.8097	intronic, cathepsin C ( <i>ctsc</i> )
mkr8.8164924	0.8827	3', von Willebrand factor A domain-containing protein 5A-like ( <i>Maylandia zebra</i> )
mkr125.302576	0.8976	exonic, phosphatase Slingshot homolog 2-like ( <i>Maylandia zebra</i> )
mkr125.1904299	0.9499	intronic, serine/threonine-protein kinase SIK3 homolog ( <i>Haplochromis burtoni</i> )
mkr125.1904328	0.95	intronic, serine/threonine-protein kinase SIK3 homolog ( <i>Haplochromis burtoni</i> )
mkr84.178152	0.6248	intronic, D4 zinc and double PHD fingers family 1 ( <i>dpf1</i> )
mkr84.414096	1	3', glioma tumor suppressor candidate region gene 2 ( <i>gltscr2</i> )
mkr84.541826	0.95	intronic, ATPase aminophospholipid transporter class I type 8B member 1 ( <i>atp8b1</i> )
mkr84.814645	0.9236	5', 28S ribosomal protein S22, mitochondrial-like ( <i>Maylandia zebra</i> )
mkr84.1255367	0.8503	3', calyntenin 2 ( <i>clstn2</i> )
<b>mkr84.1673690</b>	<b>1</b>	<b>3', ephrin type-A receptor 4 (<i>epha4a</i>)</b>
<b>mkr84.1823503</b>	<b>1</b>	<b>3', paired box 3b (<i>pax3b</i>)</b>
mkr84.2400244	0.7956	intronic, chloride channel voltage-sensitive 2 ( <i>CLCN2</i> )
mkr84.2526567	1	3' chordin ( <i>chd</i> )
mkr216.536016	1	5', vascular endothelial zinc finger 1b ( <i>vezf1b</i> )
mkr225.417828	0.5944	intronic, seizure related 6 homolog b ( <i>sez6b</i> )
mkr225.600890	0.95	5', PHD finger protein 12a ( <i>phf12a</i> )
mkr0.358525	0.8573	5', pleckstrin homology-like domain family B member 1b ( <i>phldb1b</i> )
mkr0.1325166	1	3', sortilin-related receptor L(DLR class) A repeats containing ( <i>sor1</i> )
mkr0.1325183	1	3', sortilin-related receptor L(DLR class) A repeats containing ( <i>sor1</i> )
mkr0.2582514	0.9472	intronic, breast carcinoma amplified sequence 3 ( <i>bcas3</i> )
mkr0.2639114	1	intronic, breast carcinoma amplified sequence 3 ( <i>bcas3</i> )
mkr0.3426417	1	5', bone morphogenetic protein/retinoic acid inducible neural-specific 1 ( <i>BRINP1</i> )

\* Gene names based on homolog to zebrafish entrez genes (unless indicated otherwise)