

Bioforsk Report

Vol. 4 No. 133 2009

Interlaboratory comparison of genetic profiles of brown bears from Sweden (Laboratoire d'Ecologie Alpine) and Norway (Bioforsk Svanhovd).

Authors:

Siv Grete Aarnes¹, Eva Bellemain², Hans Geir Eiken¹ and Ingvild Warttinen¹

¹ Bioforsk Soil and Environment, Svanhovd

² Natural History Museum P.O. Box 1172 Blindern Oslo NORWAY

Bioforsk Soil and Environment, Svanhovd





Main office
Frederik A. Dahls vei 20,
N-1432 Ås
Tel.: (+47) 40 60 41 00
Fax: (+47) 63 00 92 10
post@bioforsk.no

Bioforsk Soil and Environment
Svanhovd
N-9925 Svanvik
Tlf: + 047 464 13 600
Faks: + 47 78 99 56 00
svanhovd@bioforsk.no

Title:

Interlaboratory comparison of genetic profiles of brown bears from Sweden (Laboratoire d'Ecologie Alpine) and Norway (Bioforsk Svanhovd).

Authors:

Siv Grete Aarnes, Eva Bellemain, Hans Geir Eiken and Ingvild Wartainen

<i>Date:</i> 04.11.2009	<i>Availability:</i> open	<i>Project No.:</i> 4310022	<i>Archive No.:</i>
<i>Report No.:</i> 4 (133) 2009	<i>ISBN-no.:</i> 978-82-17-00554-4	<i>Number of pages:</i> 28	<i>Number of appendix:</i> 2

<i>Employer:</i> Directorate of Nature Management	<i>Contact person:</i> Ingvild Wartainen
--	---

<i>Keywords:</i> Microsatellites, DNA, fragment analysis, genetic database, brown bear, <i>Ursus arctos</i>	<i>Field of work:</i> Molecular genetics
--	---

Summary:


Comparisons of individual DNA-profiles between different laboratories require that the data can be standardized. In this study, we compared DNA profiles of brown bears (*Ursus arctos*) from Sweden with DNA profiles of Norwegian brown bears. Brown bear samples from Sweden were analyzed at Laboratoire d'Ecologie Alpine (LECA) in France, while the samples collected in Norway were analyzed in the DNA laboratory at Bioforsk Svanhovd. In April 2008, DNA from 38 different bears were analyzed both at LECA in France and at Bioforsk Svanhovd in Norway, which allowed to estimate a first calibrations keys and normalise the data. In this study, new calibration keys were determined in order to make the genotypes from Norwegian bears comparable with the whole Swedish bear genetic database. The comparison based on the new calibration key included 163 individuals from Norway (time period 2005-2009) and gave 42 matches with individuals from the database for Swedish brown bears (time period 2001-2009). Marker MU59 did not function well in this calibration and additional analyses are needed to sort out the problems with this marker.

Sammendrag:

Sammenligning av individuelle DNA-profiler mellom ulike laboratorier krever at data kan bli standardisert. I dette studiet sammenlignet vi DNA profiler av brunbjørn (*Ursus arctos*) fra Sverige med DNA profiler av brunbjørn i Norge. Prøver fra brunbjørn samlet i Sverige ble analysert ved Laboratoire d'Ecologie Alpine (LECA) i Frankrike mens prøver samlet i Norge ble analysert i DNA laboratoriet ved Bioforsk Svanhovd. I april 2008 ble DNA fra 38 bjørneindivider analysert både ved LECA i Frankrike og Bioforsk Svanhovd i Norge, noe som gjorde det mulig å estimere et første sett med kalibreringsnøkler og deretter normalisere data. I dette studiet, nye kalibreringsnøkler ble bestemt for å gjøre genotyper fra norske bjørner sammenlignbare med databasen for brunbjørn i Sverige. Sammenligningen basert på de nye kalibreringsnøklerne inkluderte 163 individer fra Norge (tidsperiode 2005-2009) og gav 42 match med individer fra databasen for brunbjørn i Sverige (tidsperiode 2001-2009).

Markøren MU59 fungerte ikke i denne kalibreringen, og tilleggsanalyser er nødvendig for å løse problemet med denne markøren.

Approved

A handwritten signature in blue ink, appearing to read "Ingvild Wartainen", written over a horizontal line.

Ingvild Wartainen

Project leader

A handwritten signature in blue ink, appearing to read "Siv Grete Aarnes", written over a horizontal line.

Siv Grete Aarnes

Contents

1. Abstract	4
2. Introduction	5
3. Methods	6
4. Results and discussion	7
5. Conclusions	13
6. References	14
7. Appendix	15

1. Abstract

Comparisons of individual DNA-profiles between different laboratories require that the data can be standardized. In this study, we compared DNA profiles of brown bears (*Ursus arctos*) from Sweden with DNA profiles of Norwegian brown bears. Brown bear samples from Sweden were analyzed at Laboratoire d'Ecologie Alpine (LECA) in France, while the samples collected in Norway were analyzed in the DNA laboratory at Bioforsk Svanhovd. In April 2008, DNA from 38 different bears were analyzed both at LECA in France and at Bioforsk Svanhovd in Norway, which allowed to estimate a first calibrations keys and normalise the data. In this study, new calibration keys were determined in order to make the genotypes from Norwegian bears comparable with the whole Swedish bear genetic database. The comparison based on the new calibration key included 163 individuals from Norway (time period 2005-2009) and gave 42 matches with individuals from the database for Swedish brown bears (time period 2001-2009).

Marker MU59 did not function well in this calibration and additional analyses are needed to sort out the problems with this marker.

2. Introduction

The population of brown bears (*Ursus arctos*) in Sweden has increased from a small remnant population of 130 individuals in 1930 (Swenson et al. 1995) to a population of more than 2500 individuals at present (Sahlén et al. 2006). Since the 1990s, Taberlet and his colleagues at the Laboratoire d'Ecologie Alpine (LECA) in France have used DNA analyses to investigate the Swedish brown bear population (Taberlet et al. 1995). In Norway, the brown bear was eliminated by 1930 due to human persecution, but at present Norway has a population of more than 120 individuals, and during the last 5 years more than 230 individuals have been identified (Eiken et al. 2007, 2009, Bjervamoen et al. 2008a, Wartiainen et al. 2008, 2009). These individuals have been identified through DNA analysis of brown bear fecal and hair samples (collected 2004-2008) at the laboratory at Bioforsk Svanhovd in Norway. A comparison of individual DNA-profiles between Norwegian and Swedish brown bears is of major interest to both research and management. However, the two laboratories have minor differences in methods and equipment, and e.g. electrophoretic conditions may affect mobility of DNA fragments and size determination of STR alleles. Thus, normalization of allele sizes using a set of size standards will be required to perform interlaboratory comparisons (Budowle et al. 2005).

In 2008, a set of calibration keys were calculated for 6 microsatellite markers (Mu10, Mu23, Mu50, Mu51, Mu59 and G10L) based on DNA analysis of 38 brown bear individuals from North-Norway. DNA from the 38 individuals were analyzed both at LECA in France and at Bioforsk Svanhovd. Results from this calibration and later comparison with analysis of brown bears from mid-Norway and Jämtland 2006, have been reported previously (Poillot et al., Report from Laboratoire d'Ecologie Alpine, April 2008, Bjervamoen et al. 2008b).

In 2009, genotypes from 79 brown bear individuals from South-Norway calibrated according to results from 2008 were compared with the genotypes in the database for Swedish brown bears. The initial comparison gave no match, even for individuals analyzed at both laboratories (HE29 and HE59). A meeting at Svanhovd 23.-25 September 2009 between (Eva Bellemain, from) LECA and (Siv Grete Aarnes and Ingvild Wartiainen from) Bioforsk Svanhovd was arranged with the aim to identify problems and suggest solutions. In this study, we describe the results of a novel normalization of the data and the subsequent search in the Swedish database with 163 DNA profiles/individuals from Bioforsk Svanhovd.

3. Methods

Calculation of new calibration keys

At LECA, because of changes and upgrades in sequencing machines, three internal calibration keys have been used, i.e, a first one for the data produced before 2004, a second one for the years 2004-2006 and a third one from the year 2007 (that we name 2007-2009 hereafter).

The database from Swedish brown bears was standardized based on the 2004-2006 data, which means that all genotypes have been recalibrated to be comparable with the data from 2004-2006.

In 2008, 38 individuals of brown bear from North-Norway were analyzed at LECA to calculate calibration keys for genetic profiles for comparing data between LECA and Svanhovd. At this point the internal calibration was not yet done at LECA and the calibration keys were based on the 2007-2009 data (see also Bjervamoen et al. 2008b). Therefore it was not possible to compare genotypes from South-Norway bears with genotypes from the calibrated database of Swedish bears. The calibration keys for LECA and Svanhovd data was then revised using the internal calibration key of Swedish data of 2007-2009 versus 2004-2006 on the same 38 individuals (see Appendix 1).

Comparison of genotypes

After the new calibration of genotypes of Norwegian brown bears, we used a python script (J. Bessi re, 2009, unpublished) to compare the Norwegian and Swedish bear genotypes. The comparison included a total of 163 different Norwegian brown bear individuals (Appendix 2), registered from 2005 until September 2009 in the Genetic database at Bioforsk Svanhovd. The individuals HE53, HE56, TR13, ST4, ST8, ST9, ST10 and ST11 were not included in the search. The Swedish database included DNA profiles of 6123 samples from the time period 2001 until 2009.

The principle of this script is to group samples as individuals based on 6-loci genotypes, allowing 1 allele mismatch as well as a maximum of 2 missing alleles. Each sample ID is given a genotype ID number as well as an individual ID number (gen id and ind id in Appendix 2).

The script output file was checked manually, selecting only the individual IDs that included Norwegian sample IDs. We considered field data (sampling date, death date, coordinates) as well as genotyping data (number of alleles compared, sex, type of mismatches) to confirm or exclude a match.

When considering mismatches, we accepted matches with mismatch types corresponding to potential allelic dropouts but we excluded matches with mismatch types corresponding to alleles that were too different from each other.

4. Results and discussion

Calibration keys for the microsatellites

The calibration keys between LECA and Bioforsk Svanhovd calculated in 2008 (Bjervamoen et al., 2008b) were revised based on the 2004-2006 internal calibration from LECA to enable comparison of results between the two laboratories (see Method section and appendix 1)

The revised calibration key for the six microsatellites included in this study is shown in Table 1.

Table 1: Calibration keys for microsatellites and their known alleles, labs at Svanhovd and LECA.

Marker	Calibration key (difference in base pair) Svanhovd/LECA 2004-2006	Notes
Mu10	19	
Mu23	21	
Mu50	27	
Mu51	24	
Mu59	132/134?	Uncertain, the differences were not consistent.
G10L	30/32	Allele 170 and 172 (Svanhovd) have calibrations key 32.

LECA uses automatic reading in the genotyping work, while the laboratory at Bioforsk Svanhovd uses manual reading in the genotyping. Those different methods will in some cases generate differences in sizing of the alleles (Bjervamoen et al., 2008b). The differences in allele-sizing between the two laboratories were consistent, and determination of calibrations keys were possible, but some markers may have more than one key (G10L-see table 1). The alleles analyzed so far are shown in appendix 1. All new alleles need to be analyzed at both labs.

The difference between single alleles of the MU59 marker was not consistent; therefore the calibration key for this marker is uncertain. The reason is unclear and additional DNA analyses are necessary to solve this issue.

Consequently, to avoid problems in the comparison of genotypes, the problematic MU59 alleles for Norwegian bears were set to 0 (missing data) before performing the comparison of genotypes. We only kept the alleles that were judged as reliable (always consistent in the comparisons and the matching), i.e. alleles 94, 96 and 108 (see appendix 2). Consequently, the comparison was mainly based on 5 markers. To help confirming or excluding matches, as a post-treatment to the output, we manually added possible Mu59 alleles. This revealed to be useful in some cases.

The probability of identity (based on genotypes from marked bears in Sweden) using those 5 markers instead of 6 was 1.97 E-05 instead of 7.53 E-08.

Comparison of genotypes

Based on the new calibration keys, the new comparison included 163 different DNA profiles from Norwegian brown bear individuals (see methods), The individuals included in the comparison were from the following counties: Troms (27), Nordland (9), Nord Trøndelag (46), Sør Trøndelag (6), Oppland (5) and Hedmark (66). The following individuals registered in Sweden (Nordbotten and Jämtland) and analyzed at Bioforsk Svanhovd were also included: NB1, JL1, JL3, JL4 and NT6/JL5 (ID name in both Norway and Sweden).

Table 2 shows the results of the comparison and raw data is shown in appendix 2.

Table 2: Comparison of individuals/samples analyzed at Bioforsk Svanhovd and LECA. Samples analyzed at Bioforsk Svanhovd are in bold (ID name) and samples from LECA are sample-ID, not Individual-name. 1=male, 2=female.

Sample-Id/Individual-name	Sample date	Sex	Notes
1064	25.08.2006	2	
JL4	None	2	
1			
1517	17.10.2006	1	
NT15	None	1	
2			
1530	23.09.2006	1	
1531	23.09.2006	1	
1591	08.10.2006	1	
1592	09.10.2006	1	
1633	12.10.2006	1	
NT16	None	1	
3			
1736	12.09.2006	1	
NT33	None	1	
4			
13355	02.10.2006	2	
13358	02.10.2006	2	
15924	16.09.2006	2	
1837	07.09.2006	2	
JL1	None	2	
5			
3038	08.10.2006	1	
NO9	None	1	
6			
15926	17.09.2006	2	
3717	05.09.2006	2	
NT34	None	2	
7			
3721	03.10.2006	1	
NT11	None	1	
8			
3724	05.10.2006	1	
5936	16.10.2006	1	
NT27	None	1	
9			
3725	10.09.2006	2	
3728	04.10.2006	2	

NT29	None	2	
10			
14246	06.09.2006	1	
16388	None	1	
16391	04.09.2006	1	
16392	04.09.2006	1	
16402	05.09.2006	1	
16485	18.09.2006	1	
16778	12.10.2006	1	
5212	25.09.2006	1	
8100	20.09.2006	1	
Ech194	23.09.2004	1	
Ech329	08.10.2004	1	
Ech594	09.09.2004	1	G10L missing
ST5	None	1	
11			
5631	18.10.2006	1	
8154	13.09.2006	1	
NT32	None	1	
12			
14076	23.09.2006	2	
6011	21.09.2006	2	
NT18	None	2	
13			
6079	28.08.2006	1	
NT38	None	1	
14			
11157	11.09.2006	1	
11571	12.10.2006	1	
8519	05.10.2006	1	
8532	20.09.2006	1	
9033	04.09.2006	1	
HE58	none	1	
15			
9202	04.09.2006	1	
HE26	None	1	
16			
9296	01.09.2006	1	
HE5	None	1	
17			
9822	23.09.2006	1	
HE61	None	1	
18			
10415	07.09.2006	1	
W0013	16.04.2000	1	
HE38	None	1	
19			
11096	21.08.2006	1	
HE8	None	1	
20			
11100	11.09.2006	1	
ST7	None	1	Ambiguous
21			
11512	05.09.2006	1	
12857	12.09.2006	1	

B040	05.09.2001	1	
HE20	None	1	Ambiguous
22			
14681	23.09.2006	1	
ST1	None	1	
23			
15930	16.09.2006	2	
JL3	None	2	
24			
16995	14.10.2006	2	
NT13	None	2	
25			
B183	22.09.2001	2	
B186	15.09.2001	2	
B701	05.10.2001	2	
W0219	24.04.2002	2	Mu50 missing
HE7	None	2	
26			
B229	16.09.2001	2	
B233	16.09.2001	2	
W0236	14.06.2002	2	Mu50 missing
HE68	None	2	
27			
B269	19.09.2001	2	
E525	10.10.2002	2	
W9913	20.04.1999	2	
HE3	None	2	
28			
B361	09.10.2001	1	
B712	24.10.2001	1	
E522	08.10.2002	1	
E523	08.10.2002	1	
W0225	30.05.2002	1	Mu50 missing
HE4	None	1	
29			
B703	23.09.2001	1	
W0202	09.04.2002	1	Mu50 missing
HE66	None	1	
30			
B885	15.10.2001	1	
HE55	None	1	
31			
B912	09.09.2001	1	
B914	18.09.2001	1	
V142307	09.10.2007	1	
HE49	None	1	
32			
B931	05.10.2001	1	
E831	20.10.2002	1	
HE32	None	1	Ambiguous
33			
W9011	17.04.1990	1	
HE11	None	1	Ambiguous
34			
NT4	None	2	

V068507	10.05.2007	2	
35			
V111007	03.09.2007	1	One mismatch, probably a dropout
NT7	None	1	
36			
W0103	11.04.2001	1	
HE22	None	1	
37			
W0308	14.04.2003	1	
HE9	None	1	
38			
W0424	09.06.2004	1	
HE29	None	1	
39			
W9501	12.04.1995	1	
OP5	None	1	
40			
W9609	20.04.1996	1	
HE15	None	1	
41			
Ech295	26.09.2004	1	
Ech321	10.10.2004	1	
Ech418	07.09.2004	1	
Ech459	18.09.2004	1	
NT26	None	1	
42			

For 42 of the 163 DNA profiles of Norwegian individuals there was a match with DNA profiles of between 1 and up to 12 different DNA profiles samples collected in Sweden (see Table 2). In conclusion, a total of 42 of 163 Norwegian brown bears could be found among samples collected in Sweden during approximately the same time period. The 10 individuals identified in the comparison from 2006 (Poillot et al., Report from Laboratoire d'Ecologie Alpine, April 2008), were also recovered in this new comparison, except from NT6/JL5 (see below).

Individuals ST7, HE11, HE20 and HE32 were ambiguous; they matched more than one individual id in the Swedish database (Appendix 2). We considered field data and genotyping data to find the correct matching.

Marker MU59 failed to give a consistent calibration key, and additional analyses are therefore necessary to solve the problems with this marker. We recommend performing a new comparison when this is sorted out. When the genotypes will be completed with this missing locus, there is a slight chance that some current matches between Norwegian and Swedish genotypes might be discarded. The calculation of probability of identity (PI) shows a relatively radical drop when this marker is excluded in the comparison. There are about 2 chances out of 100.000 between unrelated individuals to get an identical genotype without MU59, instead of 7.5 chances out of 100 mill with MU59.

The script output file gave match for five Norwegians individuals (NT6/JL5, TR6, NO8, HE50 and HE42). These five Norwegian individuals matched single samples in the Swedish database with missing data for one marker in addition to MU59 (Appendix 2), i.e. the matches were based on only four markers. Therefore the matches were excluded in the post-treatment of the output. A new comparison with a functional MU59 may confirm the match.

The script output file gave a match between one (HE29/WO424) of the two known individuals analyzed at both labs. WO413 and HE59 gave no match because WO413 has only 3 genotyped markers and therefore don't fill the criteria for match (see methods). However, these 3 markers gave same genotype as HE59.

5. Conclusions

The calibration keys between LECA and Bioforsk Svanhovd calculated in 2008 was recalculated based on an internal calibration done by LECA in 2009. A new comparison between Swedish and Norwegian brown bear genotypes gave 42 matches.

Marker MU59 does not function well in this calibration and additional analyses will be performed to solve the problem with this marker. We recommend performing a new comparison when this is sorted out.

6. References

- Budowle, B., Garofano P., Hellman A., Ketchum M., Kanthaswamy S., Parson W., Haeringen W., Fain S., Broad T. 2005. Recommendations for animal DNA forensic and identity testing. *Int J Legal Med* 119:295-302.
- Bjervamoen S.G., Eiken H.G., Smith M., Brøseth H., Aspholm P., Maartmann E., Wabakken P., Knappskog P.M og Wartiainen I. 2008 a. Populasjonsovervåkning av brunbjørn 2005-2008: Rapport for Sør-Norge, 2007. Bioforsk rapport 52:1-44.
- Bjervamoen S.G., Wartiainen I. Knappskog P.M and Eiken H.G. 2008 b. A comparison of DNA analyses performed at Laboratoire d' Ecologie Alpine in France and at the laboratory at Bioforsk Svanhovd in Norway. Bioforsk rapport 97:1-15.
- Eiken H.G., Bjervamoen S.G., Smith M., Brøseth H., Wikan S., Jensen L., Knappskog P.M., Bjørn T.A., Ollila L. og Aspholm P. 2007. Populasjonsovervåkning av brunbjørn 2005-2008: Rapport for Sør-Trøndelag, Nord-Trøndelag, Nordland, Troms og Finnmark 2006. Bioforsk rapport 47:1-29.
- Poillot, C., Miquel, C. and Taberlet, P. 2008. Laboratoire d'Ecologie Alpine. Results from the genetic analyses performed on DNA samples from bears from the Middle and from the North Part of Norway (Nord-Trøndelag, Sør-Trøndelag and Nordland), April 2008.
- Sahlén V., Swenson J.E., Brunberg S. og Kindberg J. 2006. Det skandinaviske bjørneprosjektet. 2006. Björnen i Sverige. Rapport 2006-4.
- Swenson J.E., Wabakken P., Sandegren F., Bjärvall A., Franzén R. and Söderberg A. 1995. The near extinction and recovery of brown bears in Scandinavia in relation to bear management policies of Norway and Sweden. *Wildlife Biology* 1:11-25.
- Taberlet P., Swenson, J., Sandegren, F. and Bjärvall, A. 1995. Location of a contact zone between two highly divergent mitochondrial DNA lineages of the brown bear *Ursus arctos* in Scandinavia. *Conserv. Biol.* 9:1255-1261.
- Wartiainen. I., Tobiassen, C., Bjervamoen S. G., Smith, M. E., Wikan, S. og Eiken, H. G. 2008. DNA analyse av sporprøver fra brunbjørn, Øst-Finnmark 2007. Bioforsk Rapport 127: 1-28.
- Wartiainen. I., Tobiassen, C., Brøseth H., Bjervamoen S. G., Wikan, S. og Eiken, H. G. 2009. Populasjonsovervåkning av brunbjørn 2005-2008: DNA analyse av prøver samlet i Norge i 2008. Bioforsk Rapport 59: 1-34..
- Eiken H.G., Andreassen R.J., Kopatz A., Bjervamoen S.G., Wartiainen I., Tobiassen C., Knappskog P.M., Aspholm P.E., Smith M.E., and Aspi J. 2009. Population data for 12 STR loci in Northern European brown bear (*Ursus arctos*) and application of DNA profiles for forensic casework. *Forensic Sci. Int. Gene. Suppl.* (2009), doi:10.1016/j.fsigss.2009.07.007.

7. Appendix

Appendix 1

Alleles at LECA				Alleles at Bioforsk	Difference alleles Bioforsk-LECA2004 (calibrations key)
	2001-2004	2004-2006	2007-2009		
Mu10	113	113	115	132	19
	119	119	121	138	19
	121	121	123	140	19
	123	123	125	142	19
	125	125	127	144	19
	127	127	129	146	19
	129	129	131	148	19
	131	131	133	-	-
	134	134	135	-	-
Mu23	141	141	142	162	21
	143	143	144	164	21
	145	145	147	166	21
	147	147	149	168	21
	149	149	151	170	21
	151	150	152	171	21
	153	151	153	172	21
	153	155	174	21	
Mu50		78	80	105	-
		80		-	-
	90	90		-	-
	92	92	93	119	27
	96	96	97	123	27
	98	98	99	125	27
	100	100	101	127	27
	102	102	103	129	27

	104	104	105	131	27
Mu51	105	105	105	129	24
	113	113	113	137	24
	115	115	115	139	24
	117	117	118	141	24
	119	119	119		
	121	121	121	145	24
	123	123	124	147	24
	125	125	126	149	24
	127	127	128		
Mu59	94	94	95	226	132
	96	96	97	228	132
	98	98	99	230	132
	100	100	101	232	132
	108	108	109	240	132
	112	110	112	244	132? 134?*
	114	112	114	246	132? 134?*
	116	114	116	248	132? 134?*
	118	116	118	250	132? 134?*
				254	136?*
	120	118	120	256	?
G10L	136	136			
	138	138	141	170	32
	140	140	144	172	32
	146	146	148	176	30
	148	148	151		
	150	150	153	180	30
	152	152	155	182	30
	154	154	157	184	30
	156	156	159	186	30
162	162	165			

*inconsistent key

Appendix 2

Raw data from the comparison of individuals / samples analyzed at Bioforsk Svanhovd and LECA. Samples analyzed at Bioforsk Svanhovd are in bold (ID name) and samples from LECA are sample-ID, not Individual-name. Problematic MU59 alleles for Norwegian bears were set to missing data, 0 (except alleles 94, 96 and 108) before performing the comparison of genotypes. Possible alleles were filled in manually after running the script.

Sex column: 1=male, 2=female.

Sample type column: 1=feces 5=tissue

Numbers in red: mismatch or missing data

Numbers in bold: possible alleles for Mu59 filled in manually after running the script

Ind_id in red: excluded ambiguous matches

ind_id	gen_id	amb	sample_id	sample_type	sample_date	Project_id	sex	quality_index	coordinate_x	coordinate_y	missing_data	Mu10a	Mu10b	Mu23a	Mu23b	Mu50a	Mu50b	Mu51a	Mu51b	Mu59a	Mu59b	G10La	G10Lb	comment	ind
23	25	0	1064	1	8/25/06	NA	2	0.88	1435608	7129594	0	127	129	149	149	96	100	121	121	96	98	146	150	ok	1
23	25	0	JL4	1	None	JL4	2	1.00	0	0	0	127	129	149	149	96	100	121	121	96	98	146	150		
44	46	0	1517	1	10/17/06	NA	1	1.00	1422019	7147630	0	113	129	149	149	92	96	113	123	94	116	150	152	ok	2
44	46	0	NT15	1	None	NT15	1	1.00	0	0	0	113	129	149	149	92	96	113	123	94	116	150	152		
45	47	0	1530	1	9/23/06	NA	1	1.00	1401772	7175234	0	113	129	141	154	96	96	113	113	108	116	150	150	ok	3
45	47	0	1531	1	9/23/06	NA	1	0.96	1401818	7175440	0	113	129	141	154	96	96	113	113	108	116	150	150		
45	47	0	1591	1	10/8/06	NA	1	1.00	1411137	7177728	0	113	129	141	154	96	96	113	113	108	116	150	150		
45	47	0	1592	1	10/9/06	NA	1	1.00	1413909	7176310	0	113	129	141	154	96	96	113	113	108	116	150	150		
45	47	0	1633	1	10/12/06	NA	1	1.00	1411619	7169414	0	113	129	141	154	96	96	113	113	108	116	150	150		
45	47	0	NT16	1	None	NT16	1	1.00	0	0	0	113	129	141	154	96	96	113	113	108	116	150	150		
54	56	0	1736	1	9/12/06	NA	1	0.96	1420719	7161851	0	121	129	141	143	100	104	115	123	96	116	150	152	ok	4
54	56	0	NT33	1	None	NT33	1	1.00	0	0	0	121	129	141	143	100	104	115	123	96	116	150	152		
65	68	0	13355	1	10/2/06	NA	2	1.00	1434525	7142809	0	121	125	143	149	96	100	123	123	96	108	150	156	ok	5
65	68	0	13358	1	10/2/06	NA	2	0.96	1435903	7142452	0	121	125	143	149	96	100	123	123	96	108	150	156		
65	68	0	15924	1	9/16/06	NA	2	1.00	1436037	7141050	0	121	125	143	149	96	100	123	123	96	108	150	156		
65	68	0	1837	1	9/7/06	NA	2	1.00	1437971	7140010	0	121	125	143	149	96	100	123	123	96	108	150	156		
65	68	0	JL1	1	None	JL1	2	1.00	0	0	0	121	125	143	149	96	100	123	123	96	108	150	156		
172	178	0	3038	1	10/8/06	NA	1	1.00	1468320	7151243	0	129	129	150	151	96	98	113	123	114	116	140	150		
172	2939	0	NO9	1	None	NO9	1	1.00	0	0	0	129	129	150	151	96	98	113	123	116	116	140	150	ok	6
225	238	0	15926	1	9/17/06	NA	2	1.00	1432672	7142588	0	127	129	149	149	96	100	115	121	96	98	140	150		
225	238	0	3717	1	9/5/06	NA	2	1.00	1430989	7146110	0	127	129	149	149	96	100	115	121	96	98	140	150	ok	7
225	238	0	NT34	1	None	NT34	2	1.00	0	0	0	127	129	149	149	96	100	115	121	96	98	140	150		
227	240	0	3721	1	10/3/06	NA	1	1.00	1427260	7138312	0	123	123	147	153	92	96	123	123	114	116	150	156	ok	8
227	2942	0	NT11	1	None	NT11	1	1.00	0	0	0	123	123	147	153	92	96	123	123	116	116	150	156		
228	241	0	3724	1	10/5/06	NA	1	0.92	1427610	7143119	0	127	129	143	150	92	96	113	123	108	108	140	150	ok	9
228	241	0	5936	1	10/16/06	NA	1	0.96	1426340	7080555	0	127	129	143	150	92	96	113	123	108	108	140	150		

228	2956	0	NT27	1	None	NT27	1	1.00	0	0	0	127	129	143	150	92	96	113	123	108	0	140	150		
229	242	0	3725	1	9/10/06	NA	2	1.00	1429217	7139245	0	129	129	143	147	92	100	123	123	94	94	150	150	ok	10
229	242	0	3728	1	10/4/06	NA	2	1.00	1430878	7139288	0	129	129	143	147	92	100	123	123	94	94	150	150		
229	2958	0	NT29	1	None	NT29	2	1.00	0	0	0	129	129	143	147	92	100	123	123	94	120	150	150		
298	314	0	14246	1	9/6/06	NA	1	1.00	1413640	6992993	0	129	129	147	153	92	98	121	121	108	108	150	150	ok	11
298	314	0	16388	1	None	NA	1	0.96	1409765	7009542	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	16391	1	9/4/06	NA	1	1.00	1417083	7006781	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	16392	1	9/4/06	NA	1	0.96	1422775	6993731	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	16402	1	9/5/06	NA	1	1.00	1416585	7006849	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	16485	1	9/18/06	NA	1	0.63	1414286	7003650	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	16778	1	10/12/06	NA	1	0.96	1412880	7008422	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	5212	1	9/25/06	NA	1	0.83	1409743	7009510	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	8100	1	9/20/06	NA	1	1.00	1415832	6987835	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	Ech194	1	9/23/04	NA	1	1.00	1544400	7031700	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	314	0	Ech329	1	10/8/04	NA	1	0.92	1551387	7031876	0	129	129	147	153	92	98	121	121	108	108	150	150		
298	2087	0	Ech594	1	9/9/04	NA	1	0.75	1551504	7019503	2	129	129	147	153	92	98	121	121	108	108	0	0		
298	2927	0	ST5	1	None	ST5	1	1.00	0	0	1	129	129	147	153	92	98	121	121	108	120	150	150		
304	322	0	5631	1	10/18/06	NA	1	1.00	1375968	7019243	0	119	125	153	153	96	100	121	123	112	114	152	156		
304	322	0	8154	1	9/13/06	NA	1	1.00	1421460	6979962	0	119	125	153	153	96	100	121	123	112	114	152	156	ok	12
304	2962	0	NT32	1	None	NT32	1	1.00	0	0	0	119	125	153	153	96	100	121	123	114	114	152	156		
312	330	0	14076	1	9/23/06	NA	2	1.00	1410489	7097272	0	119	125	143	149	92	100	105	123	114	118	150	152		
312	330	0	6011	1	9/21/06	NA	2	1.00	1410468	7097352	0	119	125	143	149	92	100	105	123	114	118	150	152		
312	2946	0	NT18	1	None	NT18	2	1.00	0	0	0	119	125	143	149	92	100	105	123	116	118	150	152	ok	13
314	332	0	6079	1	8/28/06	NA	1	1.00	1405900	7092010	0	119	125	143	147	92	98	115	123	108	116	138	150		
314	332	0	NT38	1	None	NT38	1	1.00	0	0	0	119	125	143	147	92	98	115	123	108	116	138	150	ok	14
397	419	0	11157	1	9/11/06	NA	1	1.00	1365543	6951702	0	119	123	143	149	96	98	123	125	108	116	150	156		
397	419	0	11571	1	10/12/06	NA	1	1.00	1377717	6930892	0	119	123	143	149	96	98	123	125	108	116	150	156	ok	15
397	419	0	8519	1	10/5/06	NA	1	1.00	1374314	6939196	0	119	123	143	149	96	98	123	125	108	116	150	156		
397	419	0	8532	1	9/20/06	NA	1	1.00	1369512	6946489	0	119	123	143	149	96	98	123	125	108	116	150	156		
397	419	0	9033	1	9/4/06	NA	1	1.00	1373174	6938039	0	119	123	143	149	96	98	123	125	108	116	150	156		
397	2904	0	HE58	1	None	HE58	1	1.00	0	0	1	119	123	143	149	96	98	123	125	108	116	150	156		
417	441	0	9202	1	9/4/06	NA	1	0.79	1345223	6920735	0	129	129	143	149	92	98	113	123	112	114	150	150		
417	2871	0	HE26	1	None	HE26	1	1.00	0	0	2	129	129	143	149	92	98	113	123	112	114	150	150	ok	16
419	444	0	9296	1	9/1/06	NA	1	1.00	1330704	6931707	0	123	129	147	147	92	100	123	123	112	118	140	152		
419	2897	0	HE5	1	None	HE5	1	1.00	0	0	2	123	129	147	147	92	100	123	123	114	118	140	152	ok	17
446	473	0	9822	1	9/23/06	NA	1	0.96	1400344	6847737	0	123	129	153	153	92	100	115	115	114	116	138	150	ok	18
446	2908	0	HE61	1	None	HE61	1	1.00	0	0	2	123	129	153	153	92	100	115	115	116	116	138	150		
493	522	0	10415	1	9/7/06	NA	1	0.89	1382212	6880499	0	125	129	147	153	92	98	115	123	108	116	150	150		
493	522	0	W0013	5	4/16/00	W0013	1	1.00	1356700	6858700	0	125	129	147	153	92	98	115	123	108	116	150	150	ok	19
493	2884	0	HE38	1	None	HE38	1	1.00	0	0	1	125	129	147	153	92	98	115	123	108	116	150	150		
529	562	0	11096	1	8/21/06	NA	1	1.00	1355619	6911292	0	123	129	153	153	96	98	113	123	108	108	150	156	ok	20
529	2917	0	HE8	1	None	HE8	1	1.00	0	0	0	123	129	153	153	96	98	113	123	108	?	150	156		

532	565	0	11100	1	9/11/06	NA	1	0.96	1358274	6909384	0	119	129	143	149	98	100	105	123	112	114	150	154		
532	2929	1	ST7	1	None	ST7	1	1.00	0	0	2	119	129	143	149	98	100	105	123	112	114	150	154	ok	21
883	955	0	92AC02	5	9/8/92	92AC02	1	1.00	1510000	7180000	0	119	119	143	149	98	100	105	123	116	120	150	154	no	
883	2929	1	ST7	1	None	ST7	1	1.00	0	0	2	119	129	143	149	98	100	105	123	112	114	150	154		
945	1018	0	94M07	5	9/8/94	94M07	2	1.00	1428000	7138200	0	119	129	143	149	78	100	105	123	116	118	150	154	no	
945	2929	1	ST7	1	None	ST7	1	1.00	0	0	2	119	129	143	149	98	100	105	123	112	114	150	154		
543	577	0	11512	1	9/5/06	NA	1	0.96	1364003	6905006	0	119	129	147	153	98	98	115	125	112	120	150	152		
543	577	0	12857	1	9/12/06	NA	1	0.83	1373170	6873041	0	119	129	147	153	98	98	115	125	112	120	150	152	ok	22
543	577	0	B040	1	9/5/01	NA	1	0.00	1342600	6832200	0	119	129	147	153	98	98	115	125	112	120	150	152		
543	2865	1	HE20	1	None	HE20	1	1.00	0	0	2	119	129	147	153	98	98	115	125	116	120	150	152		
2203	2650	0	W0315	5	4/23/03	W0315	1	1.00	0	0	0	119	129	147	153	98	98	123	125	116	116	150	152	No	
2203	2865	1	HE20	1	None	HE20	1	1.00	0	0	2	119	129	147	153	98	98	115	125	116	120	150	152		
2255	2719	0	W0714	5	4/20/07	W0714	2	1.00	1399200	6821900	2	0	0	151	153	98	98	115	125	108	112	150	152	no	
2255	2865	1	HE20	1	None	HE20	1	1.00	0	0	2	119	129	147	153	98	98	115	125	116	120	150	152		
621	666	0	14681	1	9/23/06	NA	1	0.88	1350364	6921900	0	121	121	143	153	92	102	113	123	108	114	152	156		
621	2924	0	ST1	1	None	ST1	1	1.00	0	0	1	121	121	143	153	92	102	113	123	108	114	152	156	ok	23
641	688	0	15930	1	9/16/06	NA	2	1.00	1435745	7140790	0	121	125	143	149	100	102	121	125	96	108	150	156	ok	24
641	688	0	JL3	1	None	JL3	2	1.00	0	0	0	121	125	143	149	100	102	121	125	96	108	150	156		
650	700	0	16995	1	10/14/06	NA	2	0.67	1407447	7158820	0	127	129	149	151	96	96	115	123	96	108	150	150	ok	25
650	700	0	NT13	1	None	NT13	2	1.00	0	0	0	127	129	149	151	96	96	115	123	96	108	150	150		
1250	1363	0	B183	1	9/22/01	NA	2	0.00	1348100	6826100	0	119	123	153	153	98	100	121	125	114	116	152	156		
1250	1363	0	B186	1	9/15/01	NA	2	0.00	1347800	6827600	0	119	123	153	153	98	100	121	125	114	116	152	156		
1250	1363	0	B701	1	10/5/01	NA	2	0.00	1343000	6811200	0	119	123	153	153	98	100	121	125	114	116	152	156		
1250	2623	0	W0219	5	4/24/02	W0219	2	1.00	1348000	6818700	2	119	123	153	153	0	0	121	125	114	116	152	156	ok	26
1250	2916	0	HE7	1	None	HE7	2	1.00	0	0	2	119	123	153	153	98	100	121	125	114	116	152	156		
1259	1378	0	B229	1	9/16/01	NA	2	0.00	1326000	6864000	0	119	123	143	143	92	98	115	121	114	116	146	152	ok	27
1259	1378	0	B233	1	9/16/01	NA	2	0.00	1326000	6864000	0	119	123	143	143	92	98	115	121	114	116	146	152		
1259	2638	0	W0236	5	6/14/02	W0236	2	1.00	1332300	6850500	2	119	123	143	143	0	0	115	121	114	116	146	152		
1259	2915	0	HE68	1	None	HE68	2	1.00	0	0	2	119	123	143	143	92	98	115	121	114	116	146	152		
1268	1392	0	B269	1	9/19/01	NA	2	0.00	1347900	6809100	0	121	125	147	153	98	100	125	125	108	120	138	152	ok	28
1268	1392	0	E525	1	10/10/02	NA	2	0.00	1343100	6801500	0	121	125	147	153	98	100	125	125	108	120	138	152		
1268	1392	0	W9913	5	4/20/99	W9913	2	1.00	1342200	6806900	0	121	125	147	153	98	100	125	125	108	120	138	152		
1268	2875	0	HE3	1	None	HE3	2	1.00	0	0	1	121	125	147	153	98	100	125	125	108	120	138	152		
1285	1413	0	B361	1	10/9/01	NA	1	0.00	1350800	6833600	0	119	123	153	153	92	96	113	113	112	116	150	152		
1285	1413	0	B712	1	10/24/01	NA	1	0.00	1328300	6867000	0	119	123	153	153	92	96	113	113	112	116	150	152		
1285	1413	0	E522	1	10/8/02	NA	1	0.00	1349800	6824000	0	119	123	153	153	92	96	113	113	112	116	150	152		
1285	1413	0	E523	1	10/8/02	NA	1	0.00	1349600	6827300	0	119	123	153	153	92	96	113	113	112	116	150	152	ok	29
1285	2629	1	W0225	5	5/30/02	W0225	1	1.00	1351800	6817600	2	119	123	153	153	0	0	113	113	112	116	150	152		
1285	2886	0	HE4	1	None	HE4	1	1.00	0	0	2	119	123	153	153	92	96	113	113	116	116	150	152		
1362	1516	0	B703	1	9/23/01	NA	1	0.00	1343300	6804100	0	119	119	153	153	98	98	121	121	114	114	138	152		
1362	2606	1	W0202	5	4/9/02	W0202	1	1.00	1343000	6801900	2	119	119	153	153	0	0	121	121	114	114	138	152	ok	30
1362	2913	0	HE66	1	None	HE66	1	1.00	0	0	2	119	119	153	153	98	98	121	121	114	114	138	152		

1407	1566	0	B885	1	10/15/01	NA	1	0.00	1317500	6866500	0	123	123	153	153	92	102	113	123	116	120	150	156	ok	31
1407	2902	0	HE55	1	None	HE55	1	1.00	0	0	2	123	123	153	153	92	102	113	123	116	120	150	156		
1410	1570	0	B912	1	9/9/01	NA	1	0.00	1363900	6816000	0	125	129	143	153	98	98	113	113	108	114	150	156	ok	32
1410	1570	0	B914	1	9/18/01	NA	1	0.00	1364300	6815000	0	125	129	143	153	98	98	113	113	108	114	150	156		
1410	1570	0	V142307	5	10/9/07	V142307	1	1.00	1337789	6746920	0	125	129	143	153	98	98	113	113	108	114	150	156		
1410	2896	0	HE49	1	None	HE49	1	1.00	0	0	1	125	129	143	153	98	98	113	113	108	114	150	156		
1412	1572	0	B931	1	10/5/01	NA	1	0.00	1343900	6772000	0	123	125	153	153	92	98	113	121	116	116	150	152	ok	33
1412	1572	0	E831	1	10/20/02	NA	1	0.00	1343100	6802500	0	123	125	153	153	92	98	113	121	116	116	150	152		
1412	2878	1	HE32	1	None	HE32	1	1.00	0	0	2	123	125	153	153	92	98	113	121	116	116	150	152		
1655	1852	0	E257	1	9/30/02	NA	1	0.00	1486500	6746500	0	123	125	153	153	92	98	113	121	108	114	150	152		
1655	1852	0	E417	1	10/6/02	NA	1	0.00	1480500	6749500	0	123	125	153	153	92	98	113	121	108	114	150	152		
1655	1852	0	E426	1	10/6/02	NA	1	0.00	1481500	6748500	0	123	125	153	153	92	98	113	121	108	114	150	152	no	
1655	1852	0	E428	1	10/6/02	NA	1	0.00	1479500	6748500	0	123	125	153	153	92	98	113	121	108	114	150	152		
1655	1852	0	E531	1	10/5/02	NA	1	0.00	1482600	6741900	0	123	125	153	153	92	98	113	121	108	114	150	152		
1655	1852	0	E532	1	10/5/02	NA	1	0.00	1482700	6741000	0	123	125	153	153	92	98	113	121	108	114	150	152		
1655	1852	0	E741	1	10/1/02	NA	1	0.00	1466600	6752000	0	123	125	153	153	92	98	113	121	108	114	150	152		
1655	2190	0	V006805	5	None	V006805	3	1.00	0	0	2	123	125	143	153	0	0	113	121	108	114	150	152		
1655	2254	1	V084305	5	10/14/05	V084305	1	1.00	1502800	6754000	2	0	0	153	153	92	98	113	121	108	114	150	152		
1655	2744	1	W0827	5	6/16/08	W0827	1	1.00	1438377	6804027	2	0	0	153	153	96	98	113	121	108	114	150	152		
1655	2878	1	HE32	1	None	HE32	1	1.00	0	0	2	123	125	153	153	92	98	113	121	0	0	150	152		
2246	2709	0	W0703	5	4/16/07	W0703	2	1.00	1449500	6824900	2	0	0	145	153	92	98	113	121	114	114	150	152	no	
2246	2878	1	HE32	1	None	HE32	1	1.00	0	0	2	123	125	153	153	92	98	113	121	116	116	150	152		
1552	1721	0	BD164	5	5/10/05	BD164	1	1.00	1622200	7411500	2	129	129	147	147	0	0	113	123	116	120	146	150	may be	
1552	2975	1	NT6/JL5	1	None	NT6/JL5	1	1.00	0	0	0	129	129	147	147	78	92	113	123	116	118	146	150		
1553	11	0	15921	1	9/10/06	NA	1	1.00	1434956	7135821	0	129	129	147	147	80	92	113	123	114	118	146	150		
1553	11	0	289	1	9/24/06	NA	1	1.00	1425200	7130897	0	129	129	147	147	80	92	113	123	114	118	146	150		
1553	11	0	3709	1	9/18/06	NA	1	1.00	1427805	7142299	0	129	129	147	147	80	92	113	123	114	118	146	150		
1553	2975	1	NT6/JL5	1	None	NT6/JL5	1	1.00	0	0	0	129	129	147	147	78	92	113	123	116	118	146	150	no	
1568	1739	0	BD189	5	5/23/07	BD189	1	1.00	1591100	7409600	2	0	0	147	149	96	96	123	123	116	118	140	154	may be	
1568	2938	0	NO8	1	None	NO8	1	1.00	0	0	0	129	129	147	149	96	96	123	123	116	118	140	154		
1701	1917	0	E806	1	9/29/02	NA	1	0.00	1410800	6790000	0	121	125	153	153	98	98	123	125	108	114	146	152		
1701	1917	0	W0314	5	4/16/03	W0314	1	1.00	1412386	6792373	0	121	125	153	153	98	98	123	125	108	114	146	152	no	
1701	2855	1	HE11	1	None	HE11	1	1.00	0	0	1	121	125	153	153	98	102	123	125	108	118	146	152		
2285	2771	0	W9011	5	4/17/90	W9011	1	1.00	1259900	6864300	0	121	125	153	153	98	102	123	125	108	118	146	152	ok	34
2285	2855	1	HE11	1	None	HE11	1	1.00	0	0	1	121	125	153	153	98	102	123	125	108	118	146	152		
1902	2226	0	NT4	1	None	NT4	2	1.00	0	0	0	127	129	149	149	96	100	115	121	108	116	140	150		
1902	2226	0	V068507	5	5/10/07	V068507	2	1.00	1421100	7141215	0	127	129	149	149	96	100	115	121	108	116	140	150	ok	35
1942	2282	0	V111007	5	9/3/07	V111007	1	1.00	1412984	7090541	0	119	125	143	153	96	102	123	123	118	118	138	150		
1942	2976	0	NT7	1	None	NT7	1	1.00	0	0	1	119	125	143	153	96	102	105	123	118	?	138	150	ok	36
2181	2597	0	W0103	5	4/11/01	W0103	1	1.00	1364000	6808700	0	125	125	149	153	92	98	123	125	112	114	150	156		

2181	2867	0	HE22	1	None	HE22	1	1.00	0	0	2	125	125	149	153	92	98	123	125	116	116	150	156	ok	37
2198	2645	0	W0308	5	4/14/03	W0308	1	1.00	0	0	0	119	129	153	153	92	98	115	115	114	116	152	156		
2198	2918	0	HE9	1	None	HE9	1	1.00	0	0	2	119	129	153	153	92	98	115	115	114	116	152	156	ok	38
2219	2671	0	W0424	5	6/9/04	W0424	1	1.00	1348189	6805315	0	125	129	149	153	78	100	105	113	116	116	150	152		
2219	2874	0	HE29	1	None	HE29	1	1.00	0	0	2	125	129	149	153	78	100	105	113	116	116	150	152	ok	39
2242	2702	0	W0622	5	5/3/06	W0622	2	1.00	1342185	6804190	2	0	0	149	153	98	100	105	125	108	116	152	152	ok	may be
2242	2898	0	HE50	1	None	HE50	2	1.00	0	0	1	121	125	149	153	98	100	105	125	108	116	152	152		
2306	2794	0	W9501	5	4/12/95	W9501	1	1.00	1114700	6754800	0	121	129	149	149	96	100	123	125	108	120	146	146		
2306	2923	0	OP5	1	None	OP5	1	1.00	0	0	1	121	129	149	149	96	100	123	125	108	120	146	146	ok	40
2321	2810	0	W9609	5	4/20/96	W9609	1	1.00	1349500	6777300	0	123	129	153	153	92	100	113	125	112	118	152	156	ok	
2321	2859	0	HE15	1	None	HE15	1	1.00	0	0	2	123	129	153	153	92	100	113	125	116	118	152	156		41
2421	2020	1	Ech295	1	9/26/04	NA	1	0.92	1608875	7086822	0	121	121	141	147	92	100	121	125	118	118	146	150		
2421	2020	1	Ech321	1	10/10/04	NA	1	0.88	1614304	7091512	0	121	121	141	147	92	100	121	125	118	118	146	150		
2421	2020	1	Ech418	1	9/7/04	NA	1	0.92	1617126	7097139	0	121	121	141	147	92	100	121	125	118	118	146	150	ok	
2421	2020	1	Ech459	1	9/18/04	NA	1	0.96	1611808	7082931	0	121	121	141	147	92	100	121	125	118	118	146	150		
2421	2955	0	NT26	1	None	NT26	1	1.00	0	0	0	121	121	141	147	92	100	121	125	118	120	146	150		42
2462	1679	0	BD121	5	5/12/01	BD121	1	1.00	1562700	7430800	2	113	129	147	149	0	0	113	123	108	114	138	154	May	be
2462	3002	0	TR6	1	None	TR6	1	1.00	0	0	0	113	129	147	149	92	96	113	123	108	118	138	154		
2359	2853	0	HE1	1	None	HE1	1	1.00	0	0	2	123	129	149	153	98	100	123	125	0	0	150	156		
2360	2854	0	HE10	1	None	HE10	1	1.00	0	0	2	123	123	147	153	100	102	113	115	0	0	138	150		
2362	2857	0	HE13	1	None	HE13	1	1.00	0	0	1	125	129	143	153	92	96	121	125	108	0	150	152		
2363	2860	0	HE16	1	None	HE16	2	1.00	0	0	1	121	129	149	153	100	100	105	125	108	0	150	152		
2364	2861	0	HE17	1	None	HE17	1	1.00	0	0	1	123	123	143	147	96	100	113	123	96	0	146	146		
2365	2862	0	HE18	1	None	HE18	1	1.00	0	0	1	119	129	149	153	96	98	115	125	108	0	140	150		
2366	2863	0	HE19	1	None	HE19	1	1.00	0	0	2	119	129	149	153	98	98	123	123	0	0	146	150		
2367	1974	0	Ech183	1	10/24/04	NA	2	0.75	1560500	7035007	2	129	129	0	0	96	96	113	121	0	118	150	150		
2367	2866	0	HE21	1	None	HE21	1	1.00	0	0	2	123	129	153	153	96	96	113	121	114	116	150	150	no	
2368	2868	0	HE23	1	None	HE23	1	1.00	0	0	1	119	123	147	153	92	98	115	123	108	0	152	156		
2369	2869	0	HE24	1	None	HE24	1	1.00	0	0	2	119	123	147	150	78	100	113	123	0	0	150	150		
2370	2870	0	HE25	1	None	HE25	1	1.00	0	0	1	119	129	143	153	92	98	115	121	94	0	150	152		
2371	1484	0	B583	1	10/23/01	NA	2	0.00	1443500	6832100	2	119	129	153	153	96	98	0	0	108	116	150	150		
2371	1484	0	C195	1	10/17/01	NA	2	0.00	1445000	6830400	2	119	129	153	153	96	98	0	0	108	116	150	150	no	
2371	1484	0	E171	1	9/19/02	NA	2	0.00	1449100	6835000	2	119	129	153	153	96	98	0	0	108	116	150	150		
2371	2872	0	HE27	1	None	HE27	1	1.00	0	0	1	119	129	153	153	96	98	115	121	108	116	140	150		
2372	2873	0	HE28	1	None	HE28	2	1.00	0	0	2	119	129	150	153	92	92	121	123	0	0	156	156		
2373	2876	0	HE30	1	None	HE30	1	1.00	0	0	1	119	129	147	149	96	100	105	123	108	0	138	152		

2374	2877	0	HE31	1	None	HE31	1	1.00	0	0	2	123	129	143	143	92	92	115	121	0	0	150	156	
2375	2879	0	HE33	1	None	HE33	1	1.00	0	0	2	125	129	153	153	92	100	113	123	0	0	138	150	
2376	2880	0	HE34	1	None	HE34	1	1.00	0	0	2	119	125	149	153	98	100	113	123	0	0	140	152	
2377	2881	0	HE35	1	None	HE35	1	1.00	0	0	0	119	123	150	153	96	102	113	123	108	108	150	150	
2378	2882	0	HE36	1	None	HE36	1	1.00	0	0	2	125	125	149	153	92	96	113	115	0	0	150	156	
2379	2885	0	HE39	1	None	HE39	1	1.00	0	0	2	129	129	149	150	92	98	123	123	0	0	150	156	
2380	2697	1	W0615	5	5/1/06	W0615	1	1.00	1391046	6817068	2	0	0	153	153	96	100	123	123	108	116	146	156	
2380	2889	0	HE42	1	None	HE42	1	1.00	0	0	1	123	129	153	153	96	100	123	123	108	116	146	156	may be
2381	2890	0	HE43	1	None	HE43	1	1.00	0	0	1	113	129	149	153	96	96	113	115	108	0	150	152	
2382	2892	0	HE45	1	None	HE45	1	1.00	0	0	1	119	119	143	153	92	96	115	123	108	0	150	156	
2383	1372	0	B217	1	10/2/01	NA	2	0.00	1479600	6832300	2	119	125	149	153	92	92	0	0	108	114	150	152	
2383	1372	0	E616	1	9/20/02	NA	2	0.00	1492100	6826000	2	119	125	149	153	92	92	0	0	108	114	150	152	
2383	1372	0	E620	1	9/28/02	NA	2	0.00	1492000	6825000	2	119	125	149	153	92	92	0	0	108	114	150	152	no
2383	2893	0	HE46	1	None	HE46	1	1.00	0	0	1	119	125	149	153	92	100	113	123	108	114	150	152	
2384	2894	0	HE47	1	None	HE47	2	1.00	0	0	2	119	119	149	153	92	98	121	123	0	0	150	156	
2385	2744	1	W0827	5	6/16/08	W0827	1	1.00	1438377	6804027	2	0	0	153	153	96	98	113	121	108	114	150	152	
2385	2895	0	HE48	1	None	HE48	1	1.00	0	0	1	113	125	153	153	96	98	113	121	108	116	150	156	no
2386	2899	0	HE51	1	None	HE51	1	1.00	0	0	1	119	121	149	150	98	102	121	123	108	0	152	156	
2387	2900	0	HE52	1	None	HE52	1	1.00	0	0	1	129	129	149	153	96	96	113	121	108	0	150	152	
2388	2901	0	HE54	1	None	HE54	1	1.00	0	0	2	129	129	153	153	92	96	113	121	0	0	150	156	
2389	2905	0	HE59	1	None	HE59	1	1.00	0	0	2	125	129	143	153	98	98	121	125	0	0	138	150	
2390	2906	0	HE6	1	None	HE6	1	1.00	0	0	2	119	119	149	149	92	100	113	123	0	0	140	156	
2391	2907	0	HE60	1	None	HE60	1	1.00	0	0	1	119	121	149	153	96	100	105	115	108	0	146	150	
2392	2909	0	HE62	1	None	HE62	1	1.00	0	0	1	119	119	150	153	96	102	121	125	108	0	152	156	
2393	2910	0	HE63	1	None	HE63	1	1.00	0	0	1	129	129	153	153	78	100	113	121	108	0	152	152	
2394	2911	0	HE64	1	None	HE64	1	1.00	0	0	1	119	129	143	149	96	98	115	121	108	0	150	150	
2395	2914	0	HE67	1	None	HE67	2	1.00	0	0	2	119	125	147	153	78	92	115	125	0	0	152	156	
2396	2919	0	OP1	1	None	OP1	1	1.00	0	0	2	125	127	147	149	96	104	121	123	0	0	150	154	
2397	2920	0	OP2	1	None	OP2	1	1.00	0	0	2	113	129	149	153	98	98	105	115	0	0	140	152	
2398	2921	0	OP3	1	None	OP3	1	1.00	0	0	1	119	129	141	153	96	98	115	123	0	0	150	150	
2399	2922	0	OP4	1	None	OP4	1	1.00	0	0	1	119	123	153	153	96	98	115	123	108	0	152	156	
2400	2925	0	ST2	1	None	ST2	1	1.00	0	0	2	119	119	147	149	98	100	113	123	0	0	154	156	
2401	655	1	13275	1	9/6/06	NA	3	0.79	1406635	6890731	2	0	0	150	153	92	96	113	113	108	114	150	152	
2401	2926	0	ST3	1	None	ST3	1	1.00	0	0	2	123	129	150	153	92	96	113	113	116	116	150	152	no
2402	2928	0	ST6	1	None	ST6	1	1.00	0	0	1	123	125	150	153	92	98	113	115	108	0	152	156	
2403	2930	0	NB1	1	None	NB1	2	1.00	0	0	0	125	125	141	147	92	100	115	121	108	108	140	150	
2404	2931	0	NO1	1	None	NO1	1	1.00	0	0	0	129	129	143	151	78	96	117	123	0	108	150	154	
2405	2932	0	NO2	1	None	NO2	1	1.00	0	0	0	119	129	149	153	92	100	113	123	0	0	152	156	
2406	2934	0	NO4	1	None	NO4	1	1.00	0	0	0	121	121	151	153	78	96	113	121	0	0	140	150	
2407	2935	0	NO5	1	None	NO5	1	1.00	0	0	0	129	129	149	149	78	100	115	123	108	0	146	150	
2408	2936	0	NO6	1	None	NO6	1	1.00	0	0	0	119	119	147	149	92	92	123	123	0	0	156	156	
2409	2940	0	NT1	1	None	NT1	1	1.00	0	0	0	113	129	149	149	96	100	123	123	0	0	150	152	

2410	2941	0	NT10	1	None	NT10	1	1.00	0	0	0	119	129	143	149	96	96	113	123	108	0	156	156	
2411	2943	0	NT12	1	None	NT12	1	1.00	0	0	0	119	129	149	153	96	96	113	123	0	0	150	156	
2412	2944	0	NT14	1	None	NT14	2	1.00	0	0	0	113	119	147	149	92	96	105	123	108	0	146	150	
2413	2945	0	NT17	1	None	NT17	1	1.00	0	0	0	125	129	147	149	96	100	121	123	0	0	140	150	
2415	2948	0	NT2	1	None	NT2	2	1.00	0	0	2	119	129	149	149	96	100	105	123	94	0	0	0	
2416	2949	0	NT20	1	None	NT20	2	1.00	0	0	0	127	129	147	149	96	96	113	115	96	108	150	150	
2417	2950	0	NT21	1	None	NT21	2	1.00	0	0	0	113	129	147	149	78	92	123	123	0	0	150	150	
2418	2951	0	NT22	1	None	NT22	2	1.00	0	0	0	113	129	147	149	92	96	123	123	108	0	146	150	
2419	2953	0	NT24	1	None	NT24	1	1.00	0	0	1	119	127	150	150	96	102	113	121	0	0	138	146	
2420	2954	0	NT25	1	None	NT25	1	1.00	0	0	2	113	119	150	150	78	96	113	123	0	0	150	150	
2422	2957	0	NT28	1	None	NT28	2	1.00	0	0	0	119	125	143	147	78	98	123	123	108	0	150	150	
2423	2960	0	NT30	1	None	NT30	1	1.00	0	0	0	129	129	147	149	78	96	123	123	0	0	146	150	
2424	2961	0	NT31	1	None	NT31	1	1.00	0	0	0	119	129	143	149	96	96	113	115	96	0	146	150	
2425	2963	0	NT35	1	None	NT35	1	1.00	0	0	0	119	119	143	153	96	100	105	113	0	0	140	152	
2426	2964	0	NT36	1	None	NT36	2	1.00	0	0	0	113	129	147	149	78	92	113	123	0	0	146	152	
2427	2965	0	NT37	1	None	NT37	2	1.00	0	0	0	119	119	143	153	96	100	105	113	108	0	140	152	
2428	2966	0	NT39	1	None	NT39	1	1.00	0	0	0	119	125	149	153	92	96	105	123	108	0	140	150	
2429	2967	0	NT40	1	None	NT40	1	1.00	0	0	0	129	129	141	149	96	104	115	115	96	0	150	150	
2430	2968	0	NT41	1	None	NT41	1	1.00	0	0	0	119	129	147	153	96	100	121	125	0	0	146	146	
2431	2969	0	NT42	1	None	NT42	1	1.00	0	0	0	121	127	143	149	96	96	123	123	108	108	150	156	
2432	2970	0	NT43	1	None	NT43	1	1.00	0	0	0	113	121	149	151	96	96	113	123	108	0	140	156	
2433	2971	0	NT44	1	None	NT44	1	1.00	0	0	0	119	127	149	149	96	96	115	123	108	0	150	150	
2434	2972	0	NT45	1	None	NT45	1	1.00	0	0	0	129	129	151	153	96	96	113	115	96	0	150	156	
2435	2973	0	NT46	1	None	NT46	2	1.00	0	0	0	119	129	149	149	96	96	113	115	0	0	150	150	
2436	2974	0	NT5	1	None	NT5	2	1.00	0	0	0	113	129	149	149	78	96	123	123	94	0	150	150	
2437	2977	0	NT8	1	None	NT8	1	1.00	0	0	0	123	129	153	153	96	102	117	121	0	0	150	156	
2438	2978	0	NT9	1	None	NT9	1	1.00	0	0	0	123	129	150	153	92	104	115	121	108	108	152	156	
2439	2979	0	TR1	1	None	TR1	2	1.00	0	0	0	125	125	143	147	96	104	105	121	0	108	140	146	
2440	2980	0	TR10	1	None	TR10	2	1.00	0	0	0	125	125	141	147	96	104	115	119	0	108	150	150	
2441	2981	0	TR11	1	None	TR11	1	1.00	0	0	0	125	129	147	149	92	96	105	123	108	108	140	154	
2442	2982	0	TR12	1	None	TR12	1	1.00	0	0	0	113	125	147	147	78	92	115	121	108	108	140	150	
2443	2983	0	TR14	1	None	TR14	1	1.00	0	0	0	125	125	147	149	92	104	119	119	94	108	150	150	
2444	2984	0	TR15	1	None	TR15	2	1.00	0	0	0	119	125	141	147	96	98	119	119	0	0	150	150	
2445	2985	0	TR16	1	None	TR16	2	1.00	0	0	0	125	129	141	147	96	100	119	121	0	0	146	152	
2446	2986	0	TR17	1	None	TR17	1	1.00	0	0	0	113	125	147	151	96	100	105	105	108	108	138	140	
2447	2987	0	TR18	1	None	TR18	1	1.00	0	0	0	113	125	143	149	92	100	119	123	0	0	138	150	
2448	2988	0	TR19	1	None	TR19	1	1.00	0	0	0	125	125	141	151	96	100	105	121	108	0	140	154	
2448	2349	0	V120907	5	9/17/07	V120907	1	1.00	1606704	7600107	0	125	125	141	151	96	100	105	121	108	108	140	150	no
2449	2989	0	TR2	1	None	TR2	2	1.00	0	0	0	113	125	147	151	96	96	105	115	108	0	140	146	
2450	2990	0	TR20	1	None	TR20	2	1.00	0	0	0	119	125	147	151	96	98	105	121	108	0	138	152	
2451	2991	0	TR21	1	None	TR21	2	1.00	0	0	0	113	125	147	149	92	96	119	119	0	0	150	150	
2452	2992	0	TR22	1	None	TR22	2	1.00	0	0	0	125	129	141	147	92	104	105	121	108	108	140	146	

2453	2993	0	TR23	1	None	TR23	1	1.00	0	0	0	113	125	151	151	96	100	105	115	0	0	138	140	
2454	2994	0	TR24	1	None	TR24	1	1.00	0	0	0	113	129	147	151	96	98	105	119	108	0	140	152	
2455	2995	0	TR25	1	None	TR25	1	1.00	0	0	0	119	129	147	149	78	98	119	121	108	108	150	152	
2456	2996	0	TR26	1	None	TR26	1	1.00	0	0	0	113	129	147	147	92	96	105	123	0	0	138	140	
2457	2997	0	TR27	1	None	TR27	2	1.00	0	0	0	125	129	141	149	92	104	105	121	108	0	138	146	
2458	2998	0	TR28	1	None	TR28	2	1.00	0	0	2	0	0	147	151	96	96	115	123	108	0	140	154	
2459	2999	0	TR3	1	None	TR3	1	1.00	0	0	0	113	125	143	149	92	100	119	119	94	0	150	150	
2460	3000	0	TR4	1	None	TR4	2	1.00	0	0	0	113	113	149	151	96	96	105	115	0	0	140	146	
2461	3001	0	TR5	1	None	TR5	2	1.00	0	0	0	119	129	147	147	98	100	119	121	94	0	150	152	
2463	3003	0	TR7	1	None	TR7	2	1.00	0	0	0	125	125	143	151	96	100	105	115	94	108	140	150	
2464	3004	0	TR8	1	None	TR8	1	1.00	0	0	0	113	125	147	149	96	96	105	121	108	108	140	152	
2465	3005	0	TR9	1	None	TR9	2	1.00	0	0	0	125	125	149	151	96	100	105	115	108	108	146	150	
2492	1443	1	B455	1	10/18/01	NA	1	0.00	1439200	6829900	2	121	125	151	153	96	98	0	0	116	116	150	152	
2492	2242	1	V074205	5	9/6/05	V074205	2	1.00	1491800	6786200	2	0	0	151	153	96	98	121	125	116	116	150	152	
2492	2283	1	V111204	5	8/22/04	V111204	1	1.00	1394085	6801330	2	121	125	151	153	0	0	123	125	116	116	150	152	no
2492	2311	1	V116604	5	8/31/04	V116604	2	1.00	1557373	6762904	2	121	125	151	153	0	0	115	125	116	116	150	152	
2492	2731	1	W0812	5	4/24/08	W0812	1	1.00	1447350	6801520	2	0	0	151	153	96	98	123	125	108	116	150	152	
2492	2912	1	HE65	1	None	HE65	1	1.00	0	0	2	121	125	145	153	92	96	123	125	114	114	150	152	
2511	2283	1	V111204	5	8/22/04	V111204	1	1.00	1394085	6801330	2	121	125	151	153	0	0	123	125	116	116	150	152	no
2511	2704	1	W0624	5	5/24/06	W0624	2	1.00	1471093	6810775	2	0	0	143	153	92	96	123	125	114	116	150	152	no
2511	2912	1	HE65	1	None	HE65	1	1.00	0	0	2	121	125	145	153	92	96	123	125	114	114	150	152	
2495	1945	0	Ech075	1	9/17/04	NA	1	0.83	1627375	7023210	2	0	0	141	153	92	100	113	123	100	100	150	150	
2495	2398	1	V128604	5	8/21/04	V128604	2	1.00	1487858	7093601	2	129	129	141	153	0	0	113	123	100	114	150	150	no
2495	2903	1	HE57	1	None	HE57	1	1.00	0	0	2	129	129	145	153	92	102	113	123	116	116	150	150	
2510	819	1	O2ZZ05	5	8/29/02	O2ZZ05	2	1.00	1504600	7108900	2	129	129	147	153	0	0	113	123	114	116	150	150	
2510	2398	1	V128604	5	8/21/04	V128604	2	1.00	1487858	7093601	2	129	129	141	153	0	0	113	123	100	114	150	150	no
2510	2903	1	HE57	1	None	HE57	1	1.00	0	0	2	129	129	145	153	92	102	113	123	116	116	150	150	
2505	443	0	9215	1	9/20/06	NA	3	0.62	1349149	6921198	2	119	125	0	0	98	98	123	125	112	114	150	152	
2505	1097	1	96SN01	5	8/28/96	96SN01	1	1.00	1391000	6874000	2	129	129	151	153	0	0	123	125	108	114	150	156	
2505	2372	1	V125907	5	8/28/07	V125907	1	1.00	1481700	6810200	0	125	125	151	153	98	98	123	125	114	114	150	152	no
2505	2372	1	W0406	5	4/15/04	W0406	1	1.00	1455636	6819269	0	125	125	151	153	98	98	123	125	114	114	150	152	
2505	2737	1	W0818	5	4/28/08	W0818	2	1.00	1434345	6837265	2	0	0	151	153	98	98	123	125	108	114	150	152	
2505	2864	1	HE2	1	None	HE2	1	1.00	0	0	2	123	129	153	153	98	98	123	125	114	114	150	152	
2508	1856	1	E269	1	10/1/02	NA	1	0.00	1445500	6796500	1	0	129	153	153	98	98	123	125	116	116	150	156	
2508	2531	1	V184106	5	9/19/06	V184106	1	1.00	1401594	6805040	2	0	0	153	153	98	98	123	125	112	120	150	156	no
2508	2737	1	W0818	5	4/28/08	W0818	2	1.00	1434345	6837265	2	0	0	151	153	98	98	123	125	108	114	150	152	
2508	2864	1	HE2	1	None	HE2	1	1.00	0	0	2	123	129	153	153	98	98	123	125	114	114	150	152	
2509	1372	0	B217	1	10/2/01	NA	2	0.00	1479600	6832300	2	119	125	149	153	92	92	0	0	108	114	150	152	
2509	1372	0	E616	1	9/20/02	NA	2	0.00	1492100	6826000	2	119	125	149	153	92	92	0	0	108	114	150	152	
2509	1372	0	E620	1	9/28/02	NA	2	0.00	1492000	6825000	2	119	125	149	153	92	92	0	0	108	114	150	152	no
2509	2672	1	W0425	5	6/9/04	W0425	2	1.00	1466700	6816100	2	119	125	143	153	0	0	121	125	114	116	150	152	
2509	2891	0	HE44	1	None	HE44	1	1.00	0	0	2	119	125	143	153	92	92	121	125	114	120	150	152	

2510	2949	1	NT19	1	None	NT19	1	1.00	0	0	2	113	129	143	147	96	104	113	121	0	0	146	150	
12	14	0	302	1	9/21/06	NA	2	0.92	1430033	7099015	0	119	129	147	149	92	100	113	123	108	116	146	150	
12	2959	0	NT3	1	None	NT3	1	1.00	0	0	2	113	129	147	149	92	100	113	123	108	116	0	0	No
70	73	0	1880	1	9/19/06	NA	2	1.00	1456758	7126243	0	113	129	143	149	96	96	113	123	108	108	150	156	
70	73	0	1881	1	9/19/06	NA	2	1.00	1457593	7127237	0	113	129	143	149	96	96	113	123	108	108	150	156	
70	2952	0	NT23	1	None	NT23	1	1.00	0	0	0	119	129	143	149	96	96	113	123	108	108	150	156	No
417	1775	1	DOR021	1	9/4/04	NA	1	0.71	1494753	7187576	2	129	129	0	0	92	98	113	125	112	114	150	150	
493	2858	0	HE14	1	None	HE14	1	1.00	0	0	2	125	129	147	153	98	98	115	123	0	0	150	150	
582	619	0	12604	1	9/22/06	NA	2	1.00	1407689	6854389	0	125	125	153	153	96	98	121	121	114	116	138	152	
582	619	0	12609	1	9/5/06	NA	2	0.96	1403756	6854777	0	125	125	153	153	96	98	121	121	114	116	138	152	
582	619	0	12615	1	9/15/06	NA	2	1.00	1405171	6854097	0	125	125	153	153	96	98	121	121	114	116	138	152	
582	625	0	12691	1	10/16/06	NA	1	1.00	1403316	6850355	0	125	125	153	153	96	98	121	121	114	118	138	152	
582	2883	1	HE37	1	None	HE37	1	1.00	0	0	2	125	125	153	153	96	98	121	121	116	118	138	152	No
1220	622	0	12657	1	9/8/06	NA	1	1.00	1406203	6850706	0	123	125	153	153	96	98	121	121	114	118	138	152	
1220	622	0	12730	1	9/29/06	NA	1	1.00	1400814	6843658	0	123	125	153	153	96	98	121	121	114	118	138	152	
1220	622	0	13141	1	9/5/06	NA	1	1.00	1426752	6830578	0	123	125	153	153	96	98	121	121	114	118	138	152	
1220	622	0	13238	1	9/5/06	NA	1	0.89	1395297	6849520	0	123	125	153	153	96	98	121	121	114	118	138	152	No
1220	1316	0	B047	1	9/7/01	NA	1	0.00	1400800	6820500	0	123	125	153	153	96	98	121	121	116	118	138	152	
1220	1316	0	B051	1	9/7/01	NA	1	0.00	1400800	6820500	0	123	125	153	153	96	98	121	121	116	118	138	152	
1220	1316	0	E713	1	9/23/02	NA	1	0.00	1372500	6745800	0	123	125	153	153	96	98	121	121	116	118	138	152	
1220	1316	0	W9916	5	4/20/99	W9916	1	1.00	1403800	6828400	0	123	125	153	153	96	98	121	121	116	118	138	152	
1220	2883	1	HE37	1	None	HE37	1	1.00	0	0	2	125	125	153	153	96	98	121	121	116	118	138	152	
1990	2346	0	V120707	5	9/23/07	V120707	1	1.00	1329217	6766504	0	125	125	153	153	96	98	121	123	116	118	138	152	
1990	2883	1	HE37	1	None	HE37	1	1.00	0	0	2	125	125	153	153	96	98	121	121	116	118	138	152	No
684	737	0	O1AC02	5	9/3/01	O1AC02	1	1.00	1552800	7269000	2	119	119	149	149	0	0	113	121	100	120	146	150	
684	2933	0	NO3	1	None	NO3	1	1.00	0	0	0	119	119	149	149	96	98	115	121	100	120	146	150	no
1250	2742	0	W0825	5	4/30/08	W0825	2	1.00	1463210	6815405	2	0	0	153	153	98	100	121	125	114	116	152	152	
1562	1732	0	BD178	5	10/6/05	BD178	1	1.00	1582100	7469800	2	0	0	149	151	96	98	121	123	116	116	150	154	no
1562	2937	1	NO7	1	None	NO7	1	1.00	0	0	0	113	129	149	150	96	98	121	123	116	116	150	154	
1886	2208	0	V062805	5	8/23/05	V062805	1	1.00	1510155	7203408	2	113	129	149	149	0	0	121	123	118	118	150	154	
1886	2937	1	NO7	1	None	NO7	1	1.00	0	0	2	113	129	149	150	96	98	121	123	116	116	150	154	no
1871	199	0	3179	1	9/8/06	NA	3	0.63	1478881	7113407	2	119	125	147	153	92	100	121	123	0	0	150	150	
1871	2194	0	V042805	5	6/3/05	V042805	2	1.00	1358098	6848582	2	119	125	147	153	0	0	113	123	116	118	150	150	
1871	2888	0	HE41	1	None	HE41	1	1.00	0	0	2	119	125	147	153	92	98	121	123	116	118	150	150	no
2181	2728	1	W0809	5	4/24/08	W0809	1	1.00	1471950	6826050	2	0	0	153	153	92	98	123	125	112	114	150	156	
2213	2664	0	W0415	5	4/18/04	W0415	2	1.00	1342500	6800100	2	121	125	151	153	98	98	113	125	112	120	0	0	
2213	2887	0	HE40	1	None	HE40	1	1.00	0	0	2	121	125	153	153	98	98	113	125	116	118	152	156	no
2361	2626	0	W0222	5	4/24/02	W0222	1	1.00	1349400	6815500	2	123	129	153	153	0	0	121	125	108	116	152	156	
2361	2856	0	HE12	1	None	HE12	1	1.00	0	0	2	123	129	153	153	100	100	121	123	108	118	152	156	no
2421	257	0	16971	1	None	NA	1	0.96	1478478	7084793	0	121	121	141	147	92	100	121	125	116	118	146	150	
2421	257	0	17207	1	10/13/06	NA	1	0.83	1475781	7085177	0	121	121	141	147	92	100	121	125	116	118	146	150	

2421	257	0	3997	1	None	NA	1	1.00	1474884	7089934	0	121	121	141	147	92	100	121	125	116	118	146	150
2421	257	0	ASE149	1	10/30/04	NA	1	1.00	1617194	7103574	0	121	121	141	147	92	100	121	125	116	118	146	150
2421	257	0	NRM006	1	9/14/04	NA	1	1.00	1606040	7107759	0	121	121	141	147	92	100	121	125	116	118	146	150