

## CATALOGUE OF GENE SYMBOLS FOR WHEAT: 2005 Supplement

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The most recent edition of the Catalogue, produced and presented at the 10<sup>th</sup> International Wheat Genetics Symposium is available on CD. MacGene was produced by Y. Yamazaki ([yyamazak@lab.nig.ac.jp](mailto:yyamazak@lab.nig.ac.jp)) in collaboration with R.A. McIntosh. The Catalogue and the 2004 Supplement are displayed on the GrainGenes Website:

<http://wheat.pw.usda.gov>

### **Genes and Germplasm. TO BE ADDED AS CLAUSE 9 OF THE INTRODUCTION.**

Agreed gene designations and appropriate germplasm sources to represent them are the means of consolidating genetic knowledge in an orderly way. Such genetic stocks are reference points essential to the identification and development of new genes and germplasm. Various past members of the International Wheat Genetics Symposia Committees and the Curators of the Wheat Gene Catalogue approved by the International Wheat Genetics Symposium have agreed that new wheat gene designations in non-released germplasm will be provided only if suitable genetic stocks are available in at least one of a number of approved public germplasm collections. Such stocks in some germplasm collections, at least, can be protected by means of a Memorandum of Understanding limiting their use only to research. In most instances this will not apply to cultivars unless it is anticipated that such cultivars would be difficult to procure for research.

The currently approved collections are:  
Australian Winter Cereals Collection  
CIMMYT collection

ICARDA collection  
 John Innes Collection  
 Kansas State University Wheat Genetics Resource Centre Collection  
 Nordic Gene Bank (publicly available germplasm only)  
 USDA National Small Grains Collection.

**Add to the Designators:**

<b>uhw</b>	Tzion Fahima fahima@research.haifa.ac.il Institute of Evolution University of Haifa Mt. Carmel, Haifa 31905, Israel
<b>cwen</b>	Colorado wheat ESR-derived microsatellite Nora Lapitan Ft Collins Colorado State University CO 80523 USA

**DNA Markers**

**DNA Markers**

Add at end of introductory section: Approximately 8000 ESTs were mapped on a set of 101 deletion lines, containing 159 deletions distributed over the 42 wheat chromosome arms. The allocation of these ESTs to chromosome ‘bins’ can be viewed on <http://wheat.pw.usda.gov/NSF/progress.mapping.html>.  
 Manuscripts resulting from this work include {10041} and {10042}.’

<b>Group 1AS</b>	<b>Locus {reference}</b>	<b>Chrom.</b>	<b>Primers</b>
Add reference	<i>Xbarc119-1A</i> {10124}	1AS	BARC119F / BARC119R
Correct	<i>Xbarc120-1A</i> {10124}	1AS	BARC120F / BARC120R
Add reference	<i>Xbarc148-1A</i> {10124}	1AS	BARC148F / BARC148R
Correct	<i>Xbarc162-1A</i> {10124}	1AS	BARC162F / BARC162R
Add reference	<i>Xbarc263-1A</i> {10124}	1AS	BARC263F / BARC263R
Correct to 1AS	<i>Xbarc28-1A</i> {10124}	1AS	BARC28F / BARC28R
Add reference	<i>Xbarc6-1A</i> {10126}	1AS	BARC6F / BARC6R
New	<i>Xbarc1048-1A</i> {10124}	1AS	BARC1048F / BARC1048R
New	<i>Xbarc1095-1A</i> {10124}	1AS	BARC1095F / BARC1095R

New	<i>Xbarc150-1A</i> {10124}	1AS	BARC150F / BARC150R
New	<i>Xbarc176-1A</i> {10124}	1AS	BARC176F / BARC176R
New	<i>Xbarc25-1A</i> {10124}	1AS	BARC25F / BARC25R
New	<i>Xcfa2153-1A</i> {10126}	1AS	CFA2153F / CFA2153R
<b>Group 1AL</b>			
Add reference	<i>Xbarc158-1A</i> {10124}	1AL	BARC158F / BARC158R
Add reference	<i>Xbarc17-1A</i> {10124}	1AL	BARC17F / BARC17R
Add reference	<i>Xbarc213-1A</i> {10124}	1AL	BARC213F / BARC213R
Add reference	<i>Xbarc287-1A</i> {10124}	1AL	BARC287F / BARC287R
New	<i>Xbarc1022-1A</i> {10124}	1AL	BARC1022F / BARC1022R
New	<i>Xbarc48-1A</i> {10124}	1AL	BARC48F / BARC48R
New	<i>Xbarc83-1A</i> {10124}	1AL	BARC83F / BARC83R
New	<i>Xgpw7068-1A</i> {10126}	1AL	GPW7068F / GPW7068R
<b>Group 1A</b>			
New	<i>Xbarc1168-1A</i> {10124}	1A	BARC1168F / BARC1168R
New	<i>Xbarc145-1A</i> {10125}	1A	BARC145F / BARC145R
New	<i>Xbarc209-1A</i> {10124}	1A	BARC209F / BARC209R
New	<i>Xbarc240-1A</i> {10125}	1A	BARC240F / BARC240R
New	<i>Xcfd22-1A</i> {10125}	1A	CFD22F / CFD22R
New	<i>Xcfd30-1A</i> {10125}	1A	CFD30F / CFD30R
New	<i>Xcfd59-1A</i> {10125}	1A	CFD59F / CFD59R
New	<i>Xgdm136-1A</i> {10125}	1A	DMS136F / DMS136R
New	<i>Xgwm11-1A</i> {10125}	1A	WMS11F / WMS11R
New	<i>Xwmc11-1A</i> {10125}	1A	WMC11F / WMC11R
New	<i>Xwmc183-1A</i> {10125}	1A	WMC183F / WMC183R
New	<i>Xwmc469-1A</i> {10125}	1A	WMC469F / WMC469R
New	<i>Xwmc51-1A</i> {10125}	1A	WMC51F / WMC51R
New	<i>Xwmc611-1A</i> {10125}	1A	WMC611F / WMC611R
New	<i>Xwmc630-1A</i> {10125}	1A	WMC630F / WMC630R
New	<i>Xwmc673-1A</i> {10125}	1A	WMC673F / WMC673R
New	<i>Xwmc716-1A</i> {10125}	1A	WMC716F / WMC716R
New	<i>Xwmc744-1A</i> {10125}	1A	WMC744F / WMC744R
New	<i>Xwmc818-1A</i> {10125}	1A	WMC818F / WMC818R

New	<i>Xwmc826-1A</i> {10125}	1A	WMC826F /WMC826R
New	<i>Xwmc9-1A</i> {10125}	1A	WMC9F /WMC9R
<b>Group 1BS</b>			
New	<i>Xbarc1159-1B</i> {10124}	1BS	BARC1159F/ BARC1159R
New	<i>Xbarc194-1B</i> {10124}	1BS	BARC194F / BARC194R
New	<i>Xcfd170-1B</i> {10126}	1BS	CFD170F / CFD170R
Correct to 1BS	<i>Xcfa2241-1B</i> {10126}	1BS	CFA2241F / CFA2241R
New	<i>Xgdm18-1B</i> {10126}	1BS	DMS18F / DMS18R
Correct to 1BS	<i>Xgwm18-1B</i> {10126}	1BS	WMS18F / WMS18R
Correct to 1BS	<i>Xgwm273-1B</i> {10126}	1BS	WMS273F / WMS273R
Correct to 1BS	<i>Xgwm413-1B</i> {10126}	1BS	WMS413F / WMS413R
Add 1BS to 1AS	<i>Xgwm33-1B</i> {10126}	1BS	WMS33F / WMS33R
<b>Group 1BL</b>			
Add reference	<i>Xbarc137-1B</i> {10124}	1BL	BARC137F / BARC137R
Add reference	<i>Xbarc174-1B</i> {10124}	1BL	BARC174F / BARC174R
Add reference	<i>Xbarc181-1B</i> {10124}	1BL	BARC181F / BARC181R
Add reference	<i>Xbarc187-1B</i> {10124}	1BL	BARC187F / BARC187R
Add reference	<i>Xbarc188-1B</i> {10124}	1BL	BARC188F / BARC188R
Add reference	<i>Xbarc240-1B</i> {10124}	1BL	BARC240F / BARC240R
Add reference	<i>Xbarc302-1B</i> {10124}	1BL	BARC302F / BARC302R
Add reference	<i>Xbarc61-1B</i> {10124}	1BL	BARC61F / BARC61R
Add reference	<i>Xbarc80-1B</i> {10124}	1BL	BARC80F / BARC80R
Add reference	<i>Xbarc81-1B</i> {10124}	1BL	BARC81F / BARC81R
New	<i>Xbarc1015-1B</i> {10124}	1BL	BARC1015F/ BARC1015R
New	<i>Xbarc1129-1B</i> {10124}	1BL	BARC1129F/ BARC1129R
New	<i>Xbarc1131-1B</i> {10124}	1BL	BARC1131F/ BARC1131R
New	<i>Xbarc131-1B</i> {10126}	1BL	BARC131F / BARC131R
Correct to 1BL	<i>Xcfa2158-1B c</i>	1BL	CFA2158F / CFA2158R
Add 1BL	<i>Xcfd20-1B</i> {10126}	1BL	CFD20F / CFD20R
Change 1B to 1BL	<i>Xcfd48-1B</i> {10126}	1BL	CFD48F / CFD48R
New	<i>Xcfd251-1B</i> {10126}	1BL	CFD251F / CFD251R
New	<i>Xgdm268-1B</i> {10126}	1BL	DMS268 / DMS268
Correct name	<i>Xgwm264.2-1B</i> {10126}	1BL	WMS264 / WMS264

Change 1B to 1BL	<i>Xwmc52-1B</i> {10126}	1BL	WMC52F / WMC52R
<b>Group 1B</b>			
New	<i>Xbarc116-1B</i> {10124}	1B	BARC116F / BARC116R
New	<i>Xbarc119-1B</i> {10124}	1B	BARC119F / BARC119R
New	<i>Xbarc1094-1B</i> {10124}	1B	BARC1094F/ BARC1094R
New	<i>Xbarc1110-1B</i> {10124}	1B	BARC1110F/ BARC1110R
New	<i>Xbarc1115-1B</i> {10124}	1B	BARC1115F/ BARC1115R
New	<i>Xbarc1134-1B</i> {10124}	1B	BARC1134F/ BARC1134R
New	<i>Xbarc1154-1B</i> {10124}	1B	BARC1154F/ BARC1154R
New	<i>Xbarc1168-1B</i> {10124}	1B	BARC1168F/ BARC1168R
New	<i>Xbarc128-1B</i> {10125}	1B	BARC128F / BARC128R
New	<i>Xbarc60-1B</i> {10125}	1B	BARC60F / BARC60R
New	<i>Xbarc8-1B</i> {10125}	1B	BARC8F / BARC8R
New	<i>Xcfa2129-1B</i> {10125}	1B	CFA2129F / CFA2129R
New	<i>Xcfd2-1B</i> {10125}	1B	CFD2F / CFD2R
New	<i>Xgdm101-1B</i> {10125}	1B	DMS101F / DMS101R
New	<i>Xgdm136-1B</i> {10125}	1B	DMS136F / DMS136R
New	<i>Xgdm33-1B</i> {10125}	1B	DMS33F / DMS33R
New	<i>Xgdm36-1B</i> {10125}	1B	DMS36F / DMS36R
New	<i>Xgwm133-1B</i> {10125}	1B	WMS133F / WMS133R
New	<i>Xgwm374.1-1B</i> {10125}	1B	WMS374.1F/ WMS374.1R
New	<i>Xgwm374.2-1B</i> {10125}	1B	WMS374.2F/ WMS374.2R
New	<i>Xgwm494-1B</i> {10125}	1B	WMS494F / WMS494R
New	<i>Xgwm608-1B</i> {10125}	1B	WMS608F / WMS608R
New	<i>Xwmc128-1B</i> {10125}	1B	WMC128F / WMC128R
New	<i>Xwmc206-1B</i> {10125}	1B	WMC206F / WMC206R
New	<i>Xwmc213-1B</i> {10125}	1B	WMC213F / WMC213R
New	<i>Xwmc269-1B</i> {10125}	1B	WMC269F / WMC269R
New	<i>Xwmc31-1B</i> {10125}	1B	WMC31F / WMC31R
New	<i>Xwmc367-1B</i> {10125}	1B	WMC367F / WMC367R
New	<i>Xwmc416-1B</i> {10125}	1B	WMC416F / WMC416R
New	<i>Xwmc419-1B</i> {10125}	1B	WMC419F / WMC419R
New	<i>Xwmc597-1B</i> {10125}	1B	WMC597F / WMC597R

New	<i>Xwmc611-1B</i> {10125}	1B	WMC611F / WMC611R
New	<i>Xwmc619-1B</i> {10125}	1B	WMC619F / WMC619R
New	<i>Xwmc626-1B</i> {10125}	1B	WMC626F / WMC626R
New	<i>Xwmc631-1B</i> {10125}	1B	WMC631F / WMC631R
New	<i>Xwmc673-1B</i> {10125}	1B	WMC673F / WMC673R
New	<i>Xwmc694-1B</i> {10125}	1B	WMC694F / WMC694R
New	<i>Xwmc719-1B</i> {10125}	1B	WMC719F / WMC719R
New	<i>Xwmc728-1B</i> {10125}	1B	WMC728F / WMC728R
New	<i>Xwmc766-1B</i> {10125}	1B	WMC766F / WMC766R
New	<i>Xwmc798-1B</i> {10125}	1B	WMC798F / WMC798R
New	<i>Xwmc813-1B</i> {10125}	1B	WMC813F / WMC813R
New	<i>Xwmc818-1B</i> {10125}	1B	WMC818F / WMC818R
New	<i>Xwmc830-1B</i> {10125}	1B	WMC830F / WMC830R
<b>Group 1DS</b>			
Add reference	<i>Xbarc152-1D</i> {10124}	1DS	BARC152F / BARC152R
New	<i>Xbarc148-1D</i> {10125}	1DS	BARC148F / BARC148R
New	<i>Xbarc149-1D</i> {10124}	1DS	BARC149F / BARC149R
Add to 1AS 1BS	<i>Xcfd15-1D</i> {10126}	1DS	CFD15F / CFD15R
Change 1DL to 1DS	<i>Xcfd21-1D</i> {10126}	1DS	CFD21F / CFD21R
Change 1DL to 1DS	<i>Xcfd58-1D</i> {10126}	1DS	CFD58F / CFD58R
New	<i>Xgpw7082-1D</i> {10126}	1DS	GPW7082F / GPW7082R
Change 1DL to 1DS	<i>Xgwm33-1D</i> {10126}	1DS	WMS33F / WMS33R
Change 1DL to 1DS	<i>Xgwm337-1D</i> {10126}	1DS	WMS337F / WMS337R
Add to 1BS	<i>Xgwm603-1D</i> {10126}	1DS	WMS603F / WMS603R
<b>Group 1DL</b>			
Add referente	<i>Xbarc119-1D</i> {10124}	1DL	BARC119F / BARC119R
Add referente	<i>Xbarc169-1D</i> {10124}	1DL	BARC169F / BARC169R
Correct	<i>Xbarc229.1-1D</i> {10124}	1DL	BARC229F / BARC229R
Correct	<i>Xbarc229.2-1D</i> {10124}	1DL	BARC229F / BARC229R
Add referente	<i>Xbarc271-1D</i> {10124}	1DL	BARC271F / BARC271R
Add referente	<i>Xbarc62-1D</i> {10124}	1DL	BARC62F / BARC62R

Add referente	<i>Xbarc66-1D</i> {10124}	1DL	BARC66F / BARC66R
Add referente	<i>Xbarc99-1D</i> {10124}	1DL	BARC99F / BARC99R
New	<i>Xbarc1042-1D</i> {10124}	1DL	BARC1042F/ BARC1042R
New	<i>Xbarc1090-1D</i> {10124}	1DL	BARC1090F/ BARC1090R
New	<i>Xbarc1108-1D</i> {10124}	1DL	BARC1108F/ BARC1108R
New	<i>Xbarc1149-1D</i> {10124}	1DL	BARC1149F/ BARC1149R
Add to 1AL	<i>Xbarc162-1D</i> {10124}	1DL	BARC162F / BARC162R
New	<i>Xbarc210-1D</i> {10124}	1DL	BARC210F / BARC210R
New	<i>Xbarc346-1D</i> {10124}	1DL	BARC346F / BARC346R
<b>Group 1D</b>			
New	<i>Xbarc112-1D</i> {10124}	1D	BARC112F / BARC112R
New	<i>Xbarc1150-1D</i> {10124}	1D	BARC1150F/ BARC1150R
New	<i>Xbarc240-1D</i> {10125}	1D	BARC240F / BARC240R
New	<i>Xbarc27-1D</i> {10124}	1D	BARC27F / BARC27R
New	<i>Xcfa2129-1D</i> {10125}	1D	CFA2129F / CFA2129R
New	<i>Xcfd15-1D</i> {10125}	1D	CFD15F / CFD15R
New	<i>Xcfd48-1D</i> {10125}	1D	CFD48F / CFD48R
Add to 1BS	<i>Xcfd92-1D</i> {10126}	1D	CFD92F /CFD92R
New	<i>Xgwm147-1D</i> {10125}	1D	WMS147F / WMS147R
New	<i>Xgwm191-1D</i> {10125}	1D	WMS191F / WMS191R
New	<i>Xgwm608-1D</i> {10125}	1D	WMS608F / WMS608R
New	<i>Xwmc261-1D</i> {10125}	1D	WMC261F / WMC261R
New	<i>Xwmc339-1D</i> {10125}	1D	WMC339F / WMC339R
New	<i>Xwmc405-1D</i> {10125}	1D	WMC405F / WMC405R
New	<i>Xwmc489-1D</i> {10125}	1D	WMC489F / WMC489R
New	<i>Xwmc590-1D</i> {10125}	1D	WMC590F / WMC590R
New	<i>Xwmc609-1D</i> {10125}	1D	WMC609F / WMC609R
New	<i>Xwmc673-1D</i> {10125}	1D	WMC673F / WMC673R
New	<i>Xwmc732-1D</i> {10125}	1D	WMC732F / WMC732R
New	<i>Xwmc813-1D</i> {10125}	1D	WMC813F / WMC813R
<b>Group 2AS</b>			
Correct	<i>Xbarc1138.1-2A</i> {10124}	2AS	BARC1138F/ BARC1138R
Correct	<i>Xbarc1138.2-2A</i> {10124}	2AS	BARC1138F/ BARC1138R

Add reference	<i>Xbarc124-2A</i> {10124}	2AS	BARC124F / BARC124R
Add reference	<i>Xbarc212-2A</i> {10124}	2AS	BARC212F / BARC212R
Add reference	<i>Xbarc231-2A</i> {10124}	2AS	BARC231F / BARC231R
Add reference	<i>Xbarc5-2A</i> {10124}	2AS	BARC5F / BARC5R
New	<i>Xbarc201-2A</i> {10124}	2AS	BARC201F / BARC201R
New	<i>Xbarc208-2A</i> {10124}	2AS	BARC208F / BARC208R
Change 2A to 2AS	<i>Xcfd2-2A</i> {10126}	2AS	CFD2F / CFD2R
New	<i>Xcfd50-2A</i> {10126}	2AS	CFD50F / CFD50R
<b>Group 2AL</b>			
Add referente	<i>Xbarc279-2A</i> {10124}	2AL	BARC279F / BARC279R
Add referente	<i>Xbarc309-2A</i> {10124}	2AL	BARC309F / BARC309R
Correct	<i>Xbarc353.1-2A</i> {10124}	2AL	BARC353F / BARC353R
Correct	<i>Xbarc353.2-2A</i> {10124}	2AL	BARC353F / BARC353R
New	<i>Xbarc15-2A</i> {10124}	2AL	BARC15F / BARC15R
New	<i>Xbarc220-2A</i> {10124}	2AL	BARC220F / BARC220R
Add to 2BL	<i>Xcfd267-2A</i> {10126}	2AL	CFD267F / CFD267R
Change 2AS to 2AL	<i>Xgpw2111-2A</i> {10126}	2AL	GPW2111F / GPW2111R
Change 2AS to 2AL	<i>Xgwm249-2A</i> {10126}	2AL	WMS249F / WMS249R
<b>Group 2A</b>			
New	<i>Xbarc76-2A</i> {10125}	2A	BARC76F / BARC76R
New	<i>Xbarc138-2A</i> {10126}	2A	BARC138F / BARC138R
New	<i>Xcfd168-2A</i> {10125}	2A	CFD168F / CFD168R
New	<i>Xcfd6-2A</i> {10125}	2A	CFD6F / CFD6R
New	<i>Xcfd86-2A</i> {10125}	2A	CFD86F / CFD86R
New	<i>Xgdm101-2A</i> {10125}	2A	DMS101F / DMS101R
New	<i>Xwmc149-2A</i> {10125}	2A	WMC149F / WMC149R
New	<i>Xwmc455-2A</i> {10125}	2A	WMC455F / WMC455R
New	<i>Xwmc598-2A</i> {10125}	2A	WMC598F / WMC598R
New	<i>Xwmc602-2A</i> {10125}	2A	WMC602F / WMC602R
New	<i>Xwmc632-2A</i> {10125}	2A	WMC632F / WMC632R
New	<i>Xwmc644-2A</i> {10125}	2A	WMC644F / WMC644R
New	<i>Xwmc658-2A</i> {10125}	2A	WMC658F / WMC658R



New	<i>Xwmc667-2A</i> {10125}	2A	WMC667F / WMC667R
New	<i>Xwmc702-2A</i> {10125}	2A	WMC702F / WMC702R
New	<i>Xwmc728-2A</i> {10125}	2A	WMC728F / WMC728R
New	<i>Xwmc792-2A</i> {10125}	2A	WMC792F / WMC792R
New	<i>Xwmc794-2A</i> {10125}	2A	WMC794F / WMC794R
New	<i>Xwmc819-2A</i> {10125}	2A	WMC819F / WMC819R
New	<i>Xwmc827-2A</i> {10125}	2A	WMC827F / WMC827R
<b>Group 2BS</b>			
Add reference	<i>Xbarc13-2B</i> {10124}	2BS	BARC13F / BARC13R
Add reference	<i>Xbarc160-2B</i> {10124}	2BS	BARC160F / BARC160R
Add reference	<i>Xbarc18-2B</i> {10124}	2BS	BARC18F / BARC18R
Add reference	<i>Xbarc200-2B</i> {10124}	2BS	BARC200F / BARC200R
Add reference	<i>Xbarc318-2B</i> {10124}	2BS	BARC318F / BARC318R
Add reference	<i>Xbarc349-2B</i> {10124}	2BS	BARC349F / BARC349R
Add reference	<i>Xbarc361-2B</i> {10124}	2BS	BARC361F / BARC361R
Add reference	<i>Xbarc7-2B</i> {10124}	2BS	BARC7F / BARC7R
Add reference	<i>Xbarc91-2B</i> {10124}	2BS	BARC91F / BARC91R
New	<i>Xbarc1024-2B</i> {10124}	2BS	BARC1024F/ BARC1024R
New	<i>Xbarc1072-2B</i> {10124}	2BS	BARC1072F/ BARC1072R
New	<i>Xbarc1114-2B</i> {10124}	2BS	BARC1114F/ BARC1114R
New	<i>Xbarc1142-2B</i> {10124}	2BS	BARC1142F/ BARC1142R
New	<i>Xbarc230-2B</i> {10124}	2BS	BARC230F / BARC230R
New	<i>Xbarc35-2B</i> {10124}	2BS	BARC35F / BARC35R
New	<i>Xbarc55-2B</i> {10124}	2BS	BARC55F / BARC55R
Change 2BL to 2BS	<i>Xgwm374-2B</i> {10126}	2BS	WMS374F / WMS374R
Change 2BL to 2BS	<i>Xgwm319-2B</i> {10126}	2BS	WMS319F / WMS319R
<b>Group 2BL</b>			
Add reference	<i>Xbarc101-2B</i> {10124}	2BL	BARC101F / BARC101R
Add reference	<i>Xbarc128-2B</i> {10124}	2BL	BARC128F / BARC128R
New	<i>Xbarc1027-2B</i> {10124}	2BL	BARC1027F/ BARC1027R
New	<i>Xbarc1042-2B</i> {10124}	2BL	BARC1042F / BARC1042R
New	<i>Xbarc1108-2B</i> {10124}	2BL	BARC1108F / BARC1108R
New	<i>Xbarc1135-2B</i> {10124}	2BL	BARC1135F / BARC1135R

New	<i>Xbarc1139-2B</i> {10124}	2BL	BARC1139F / BARC1139R
New	<i>Xbarc114-2B</i> {10124}	2BL	BARC114F / BARC114R
New	<i>Xbarc1147-2B</i> {10124}	2BL	BARC1147F / BARC1147R
New	<i>Xbarc115-2B</i> {10124}	2BL	BARC115F / BARC115R
New	<i>Xbarc1156-2B</i> {10124}	2BL	BARC1156F / BARC1156R
New	<i>Xbarc1160-2B</i> {10124}	2BL	BARC1160F / BARC1160R
New	<i>Xbarc150-2B</i> {10124}	2BL	BARC150F / BARC150R
New	<i>Xbarc16-2B</i> {10124}	2BL	BARC16F / BARC16R
New	<i>Xbarc167-2B</i> {10124}	2BL	BARC167F / BARC167R
New	<i>Xbarc210-2B</i> {10124}	2BL	BARC210F / BARC210R
New	<i>Xbarc221-2B</i> {10124}	2BL	BARC221F / BARC221R
Change 2B to 2BL	<i>Xcfd25-2B</i> {10126}	2BL	CFD25F / CFD25R
Add to 2DL	<i>Xcfd50-2B</i> {10126}	2BL	CFD50F / CFD50R
Change 2BS to 2BL	<i>Xcfd73-2B</i> {10126}	2BL	CFD73F / CFD73R
<b>Group 2B</b>			
New	<i>Xbarc10-2B</i> {10125}	2B	BARC10F / BARC10R
New	<i>Xbarc1064-2B</i> {10124}	2B	BARC1064F / BARC1064R
New	<i>Xbarc1154-2B</i> {10124}	2B	BARC1154F / BARC1154R
New	<i>Xbarc116-2B</i> {10124}	2B	BARC116F / BARC116R
New	<i>Xbarc124-2B</i> {10125}	2B	BARC124F / BARC124R
New	<i>Xbarc159-2B</i> {10125}	2B	BARC159F / BARC159R
New	<i>Xbarc183-2B</i> {10125}	2B	BARC183F / BARC183R
New	<i>Xbarc45-2B</i> {10125}	2B	BARC45F / BARC45R
New	<i>Xbarc98-2B</i> {10125}	2B	BARC98F / BARC98R
New	<i>Xcfd70-2B</i> {10125}	2B	CFD70F / CFD70R
New	<i>Xgwm132-2B</i> {10125}	2B	WMS132F / WMS132R
New	<i>Xwmc261-2B</i> {10125}	2B	WMC261F / WMC261R
New	<i>Xwmc27-2B</i> {10125}	2B	WMC27F / WMC27R
New	<i>Xwmc356-2B</i> {10125}	2B	WMC356F / WMC356R
New	<i>Xwmc382-2B</i> {10125}	2B	WMC382F / WMC382R
New	<i>Xwmc489-2B</i> {10125}	2B	WMC489F / WMC489R
New	<i>Xwmc498-2B</i> {10125}	2B	WMC498F / WMC498R
New	<i>Xwmc500-2B</i> {10125}	2B	WMC500F / WMC500R

New	<i>Xwmc592-2B</i> {10125}	2B	WMC592F / WMC592R
New	<i>Xwmc597-2B</i> {10125}	2B	WMC597F / WMC597R
New	<i>Xwmc602-2B</i> {10125}	2B	WMC602F / WMC602R
New	<i>Xwmc627-2B</i> {10125}	2B	WMC627F / WMC627R
New	<i>Xwmc661-2B</i> {10125}	2B	WMC661F / WMC661R
New	<i>Xwmc764-2B</i> {10125}	2B	WMC764F / WMC764R
New	<i>Xwmc770-2B</i> {10125}	2B	WMC770F / WMC770R
New	<i>Xwmc817-2B</i> {10125}	2B	WMC817F / WMC817R
<b>Group 2DS</b>			
Add reference	<i>Xbarc124-2D</i> {10124}	2DS	BARC124F / BARC124R
Add reference	<i>Xbarc168-2D</i> {10124}	2DS	BARC168F / BARC168R
Add reference	<i>Xbarc297-2D</i> {10124}	2DS	BARC297F / BARC297R
New	<i>Xbarc1070-2D</i> {10124}	2DS	BARC1070F / BARC1070R
New	<i>Xbarc1146-2D</i> {10124}	2DS	BARC1146F / BARC1146R
New	<i>Xbarc95-2D</i> {10124}	2DS	BARC95F / BARC95R
New	<i>Xcfd175-2D</i> {10126}	2DS	CFD175F / CFD175R
New	<i>Xcnl1-2D</i> {10126}	2DS	CNL1F / CNL1R
New	<i>Xcnl3-2D</i> {10126}	2DS	CNL3F / CNL3R
Add to 2AS	<i>Xgdm5-2D</i> {10126}	2DS	DMS5F / DMS5R
Change 2D to 2DS	<i>Xgdm77-2D</i> {10126}	2DS	DMS77F / DMS77R
<b>Group 2DL</b>			
Add reference	<i>Xbarc11-2D</i> {10124}	2DL	BARC11F / BARC11R
Add reference	<i>Xbarc145-2D</i> {10124}	2DL	BARC145F / BARC145R
Add reference	<i>Xbarc159-2D</i> {10124}	2DL	BARC159F / BARC159R
Add reference	<i>Xbarc219-2D</i> {10124}	2DL	BARC219F / BARC219R
Add reference	<i>Xbarc228-2D</i> {10124}	2DL	BARC228F / BARC228R
Add reference	<i>Xbarc292-2D</i> {10124}	2DL	BARC292F / BARC292R
New	<i>Xbarc1095-2D</i> {10124}	2DL	BARC1095F / BARC1095R
New	<i>Xbarc1143-2D</i> {10124}	2DL	BARC1143F / BARC1143R
Add to 2DL	<i>Xcfd267-2D</i> {10126}	2DL	CFD267F / CFD267R
<b>Group 2D</b>			
New	<i>Xbarc103-2D</i> {10124}	2D	BARC103F / BARC103R
New	<i>Xbarc112-2D</i> {10124}	2D	BARC112F / BARC112R

New	<i>Xbarc1153-2D</i> {10124}	2D	BARC1153F / BARC1153R
New	<i>Xbarc235-2D</i> {10124}	2D	BARC235F / BARC235R
New	<i>Xbarc59-2D</i> {10125}	2D	BARC59F / BARC59R
New	<i>Xbarc90-2D</i> {10125}	2D	BARC90F / BARC90R
New	<i>Xcfd193-2D</i> {10125}	2D	CFD193F / CFD193R
New	<i>Xcfd65-2D</i> {10125}	2D	CFD65F / CFD65R
New	<i>Xgwm122-2D</i> {10125}	2D	WMS122F / WMS122R
New	<i>Xwmc144-2D</i> {10125}	2D	WMC144F / WMC144R
New	<i>Xwmc601-2D</i> {10125}	2D	WMC601F / WMC601R
New	<i>Xwmc630-2D</i> {10125}	2D	WMC630F / WMC630R
New	<i>Xwmc797-2D</i> {10125}	2D	WMC797F / WMC797R
New	<i>Xwmc817-2D</i> {10125}	2D	WMC817F / WMC817R
New	<i>Xwmc818-2D</i> {10125}	2D	WMC818F / WMC818R
<b>Group 3AS</b>			
Add reference	<i>Xbarc12-3A</i> {10124}	3AS	BARC12F / BARC12R
Add reference	<i>Xbarc179-3A</i> {10124}	3AS	BARC179F / BARC179R
Add reference	<i>Xbarc19-3A</i> {10124}	3AS	BARC19F / BARC19R
Add reference	<i>Xbarc294-3A</i> {10124}	3AS	BARC294F / BARC294R
Add reference	<i>Xbarc310-3A</i> {10124}	3AS	BARC310F / BARC310R
Add reference	<i>Xbarc321-3A</i> {10124}	3AS	BARC321F / BARC321R
Add reference	<i>Xbarc324-3A</i> {10124}	3AS	BARC324F / BARC324R
Add reference	<i>Xbarc356-3A</i> {10124}	3AS	BARC356F / BARC356R
Correct	<i>Xbarc45-3A</i> {10124}	3AS	BARC45F / BARC45R
Correct	<i>Xbarc57.1-3A</i> {10124}	3AS	BARC57.1F / BARC57.1R
Add reference	<i>Xbarc67-3A</i> {10124}	3AS	BARC67F / BARC67R
New	<i>Xbarc1171-3A</i> {10124}	3AS	BARC1171F / BARC1171R
New	<i>Xbarc54-3A</i> {10124}	3AS	BARC54F / BARC54R
New	<i>Xbarc86-3A</i> {10124}	3AS	BARC86F / BARC86R
<b>Group 3AL</b>			
Add reference	<i>Xbarc197-3A</i> {10124}	3AL	BARC197F / BARC197R
Add reference	<i>Xbarc25-3A</i> {10124}	3AL	BARC25F / BARC25R
Correct	<i>Xbarc284-3A</i> {10124}	3AL	BARC284F / BARC284R
Add reference	<i>Xbarc314-3A</i> {10124}	3AL	BARC314F / BARC314R
New	<i>Xbarc1021-3A</i> {10124}	3AL	BARC1021F / BARC1021R
New	<i>Xbarc1040-3A</i> {10126}	3AL	BARC1040F / BARC1040R

New	<i>Xbarc105-3A</i> {10124}	3AL	BARC105F / BARC105R
New	<i>Xbarc1060-3A</i> {10124}	3AL	BARC1060F / BARC1060R
New	<i>Xbarc1099-3A</i> {10124}	3AL	BARC1099F / BARC1099R
New	<i>Xbarc1113-3A</i> {10124}	3AL	BARC1113F / BARC1113R
New	<i>Xbarc1177-3A</i> {10124}	3AL	BARC1177F / BARC1177R
New	<i>Xbarc1193-3A</i> {10124}	3AL	BARC1193F / BARC1193R
New	<i>Xbarc150-3A</i> {10124}	3AL	BARC150F / BARC150R
New	<i>Xbarc164-3A</i> {10126}	3AL	BARC164F / BARC164R
New	<i>Xbarc193-3A</i> {10124}	3AL	BARC193F / BARC193R
New	<i>Xbarc51-3A</i> {10124}	3AL	BARC51F / BARC51R
New	<i>Xbarc57.2-3A</i> {10124}	3AL	BARC57.2F / BARC57.2R
New	<i>Xcfa2037-3A</i> {10126}	3AL	CFA2037F / CFA2037R
New	<i>Xcfa2076-3A</i> {10126}	3AL	CFA2076F / CFA2076R
New	<i>Xcfa2183-3A</i> {10126}	3AL	CFA2183F / CFA2183R
Add to 3DL	<i>Xcnl4-3A</i> {10126}	3AL	CNL4F / CNL4R
Add to 3BL, 3DL	<i>Xgwm114-3A</i> {10126}	3AL	WMS114F / WMS114R
New	<i>Xgwm674-3A</i> {10126}	3AL	WMS674F / WMS674R
Change 3AS to 3AL	<i>Xgwm218-3A</i> {10126}	3AL	WMS218F / WMS218R
Change 3AS to 3AL	<i>Xgwm32-3A</i> {10126}	3AL	WMS32F / WMS32R
Change 3AS to 3AL	<i>Xgwm5-3A</i> {10126}	3AL	WMS5F / WMS5R
Add to 2BS, 2BL	<i>Xwmc175-3A</i> {10126}	3AL	WMC175F / WMC175R
<b>Group 3A</b>			
New	<i>Xbarc1040-3A</i> {10126}	3A	BARC1040F / BARC1040R
New	<i>Xbarc112-3A</i> {10124}	3A	BARC112F / BARC112R
New	<i>Xbarc1159-3A</i> {10124}	3A	BARC1159F / BARC1159R
New	<i>Xbarc215-3A</i> {10124}	3A	BARC215F / BARC215R
New	<i>Xbarc69-3A</i> {10125}	3A	BARC69F / BARC69R
New	<i>Xcfa2076-3A</i> {10125}	3A	CFA2076F / CFA2076R
New	<i>Xcfd193-3A</i> {10125}	3A	CFD193F / CFD193R
New	<i>Xgwm133-3A</i> {10125}	3A	WMS133F / WMS133R
New	<i>Xgwm403-3A</i> {10125}	3A	WMS403F / WMS403R

New	<i>Xgwm4-3A</i> {10125}	3A	WMS4F / WMS4R
New	<i>Xgwm494-3A</i> {10125}	3A	WMS494F / WMS494R
New	<i>Xgwm674-3A</i> {10125}	3A	WMS674F / WMS674R
New	<i>Xwmc173-3A</i> {10125}	3A	WMC173F / WMC173R
New	<i>Xwmc215-3A</i> {10125}	3A	WMC215F / WMC215R
New	<i>Xwmc532-3A</i> {10125}	3A	WMC532F / WMC532R
New	<i>Xwmc559-3A</i> {10125}	3A	WMC559F / WMC559R
New	<i>Xwmc594-3A</i> {10125}	3A	WMC594F / WMC594R
New	<i>Xwmc627-3A</i> {10125}	3A	WMC627F / WMC627R
New	<i>Xwmc640-3A</i> {10125}	3A	WMC640F / WMC640R
New	<i>Xwmc651-3A</i> {10125}	3A	WMC651F / WMC651R
New	<i>Xwmc664-3A</i> {10125}	3A	WMC664F / WMC664R
New	<i>Xwmc695-3A</i> {10125}	3A	WMC695F / WMC695R
New	<i>Xwmc96-3A</i> {10125}	3A	WMC96F / WMC96R
<b>Group 3BS</b>			
Add reference	<i>Xbarc102-3B</i> {10124}	3BS	BARC102F / BARC102R
Add reference	<i>Xbarc133-3B</i> {10124}	3BS	BARC133F / BARC133R
Add reference	<i>Xbarc147-3B</i> {10124}	3BS	BARC147F / BARC147R
Add reference	<i>Xbarc218-3B</i> {10124}	3BS	BARC218F / BARC218R
Add reference	<i>Xbarc75-3B</i> {10124}	3BS	BARC75F / BARC75R
New	<i>Xbarc139-3B</i> {10124}	3BS	BARC139F / BARC139R
New	<i>Xbarc156-3B</i> {10124}	3BS	BARC156F / BARC156R
New	<i>Xbarc68-3B</i> {10124}	3BS	BARC68F / BARC68R
New	<i>Xbarc73-3B</i> {10124}	3BS	BARC73F / BARC73R
New	<i>Xbarc87-3B</i> {10124}	3BS	BARC87F / BARC87R
New	<i>Xcfa2191-3B</i> {10126}	3BS	CFA2191F / CFA2191R
Add to 1AS	<i>Xcfa2226-3B</i> {10126}	3BS	CFA2226F / CFA2226R
New	<i>Xcfd143-3B</i> {10126}	3BS	CFD143F / CFD143R
Change 3BL to 3BS	<i>Xgwm566-3B</i> {10126}	3BS	WMS566F / WMS566R
<b>Group 3BL</b>			
Add reference	<i>Xbarc164-3B</i> {10124}	3BL	BARC164F / BARC164R
Add reference	<i>Xbarc344-3B</i> {10124}	3BL	BARC344F / BARC344R
Add reference	<i>Xbarc84-3B</i> {10124}	3BL	BARC84F / BARC84R

New	<i>Xbarc1044-3B</i> {10124}	3BL	BARC1044F / BARC1044R
New	<i>Xbarc1077-3B</i> {10124}	3BL	BARC1077F / BARC1077R
New	<i>Xbarc1124-3B</i> {10124}	3BL	BARC1124F / BARC1124R
New	<i>Xbarc115-3B</i> {10124}	3BL	BARC115F / BARC115R
New	<i>Xbarc203-3B</i> {10124}	3BL	BARC203F / BARC203R
New	<i>Xbarc77-3B</i> {10124}	3BL	BARC77F / BARC77R
Change 3BS to 3BL	<i>Xgpw1146-3B</i> {10126}	3BL	GPW1146F / GPW1146R
Change 3BS to 3BL	<i>Xgwm376-3B</i> {10126}	3BL	WMS376F / WMS376R
Add to 1DS	<i>Xcfa2170-3B</i> {10126}	3BL	CFA2170F / CFA2170R
<b>Group 3B</b>			
New	<i>Xbarc101-3B</i> {10113}	3B	BARC101F / BARC101R
New	<i>Xbarc1040-3B</i> {10126}	3B	BARC1040F / BARC1040R
New	<i>Xbarc112-3B</i> {10124}	3B	BARC112F / BARC112R
New	<i>Xbarc131-3B</i> {10124}	3B	BARC131F / BARC131R
New	<i>Xbarc135-3B</i> {10126}	3B	BARC135F / BARC135R
New	<i>Xbarc145-3B</i> {10125}	3B	BARC145F / BARC145R
New	<i>Xbarc173-3B</i> {10125}	3B	BARC173F / BARC173R
New	<i>Xbarc180-3B</i> {10125}	3B	BARC180F / BARC180R
New	<i>Xbarc206-3B</i> {10125}	3B	BARC206F / BARC206R
New	<i>Xbarc229-3B</i> {10125}	3B	BARC229F / BARC229R
New	<i>Xbarc234-3B</i> {10124}	3B	BARC234F / BARC234R
New	<i>Xbarc92-3B</i> {10125}	3B	BARC92F / BARC92R
New	<i>Xcfa2134-3B</i> {10125}	3B	CFA2134 F / CFA2134R
New	<i>Xcfa2170-3B</i> {10125}	3B	CFA2170F / CFA2170R
New	<i>Xcfd283-3B</i> {10125}	3B	CFD283F / CFD283R
New	<i>Xcfd28-3B</i> {10125}	3B	CFD28F / CFD28R
New	<i>Xcfd6-3B</i> {10125}	3B	CFD6F / CFD6R
New	<i>Xgwm274-3B</i> {10125}	3B	WMS274F / WMS274R
New	<i>Xgwm644-3B</i> {10125}	3B	WMS644F / WMS644R
New	<i>Xwmc1-3B</i> {10125}	3B	WMC1F / WMC1R
New	<i>Xwmc182-3B</i> {10125}	3B	WMC182F / WMC182R
New	<i>Xwmc206-3B</i> {10125}	3B	WMC206F / WMC206R
New	<i>Xwmc261-3B</i> {10125}	3B	WMC261F / WMC261R

New	<i>Xwmc274-3B</i> {10125}	3B	WMC274F / WMC274R
New	<i>Xwmc307-3B</i> {10125}	3B	WMC307F / WMC307R
New	<i>Xwmc430-3B</i> {10125}	3B	WMC430F / WMC430R
New	<i>Xwmc446-3B</i> {10125}	3B	WMC446F / WMC446R
New	<i>Xwmc51-3B</i> {10125}	3B	WMC51F / WMC51R
New	<i>Xwmc533-3B</i> {10125}	3B	WMC533F / WMC533R
New	<i>Xwmc544-3B</i> {10125}	3B	WMC544F / WMC544R
New	<i>Xwmc597-3B</i> {10125}	3B	WMC597F / WMC597R
New	<i>Xwmc612-3B</i> {10125}	3B	WMC612F / WMC612R
New	<i>Xwmc615-3B</i> {10125}	3B	WMC615F / WMC615R
New	<i>Xwmc623-3B</i> {10125}	3B	WMC623F / WMC623R
New	<i>Xwmc625-3B</i> {10125}	3B	WMC625F / WMC625R
New	<i>Xwmc632-3B</i> {10125}	3B	WMC632F / WMC632R
New	<i>Xwmc653-3B</i> {10125}	3B	WMC653F / WMC653R
New	<i>Xwmc674-3B</i> {10125}	3B	WMC674F / WMC674R
New	<i>Xwmc675-3B</i> {10125}	3B	WMC675F / WMC675R
New	<i>Xwmc679-3B</i> {10125}	3B	WMC679F / WMC679R
New	<i>Xwmc687-3B</i> {10125}	3B	WMC687F / WMC687R
New	<i>Xwmc693-3B</i> {10125}	3B	WMC693F / WMC693R
New	<i>Xwmc695-3B</i> {10125}	3B	WMC695F / WMC695R
New	<i>Xwmc751-3B</i> {10125}	3B	WMC751F / WMC751R
New	<i>Xwmc754-3B</i> {10125}	3B	WMC754F / WMC754R
New	<i>Xwmc762-3B</i> {10125}	3B	WMC762F / WMC762R
New	<i>Xwmc777-3B</i> {10125}	3B	WMC777F / WMC777R
New	<i>Xwmc787-3B</i> {10125}	3B	WMC787F / WMC787R
New	<i>Xwmc808-3B</i> {10125}	3B	WMC808F / WMC808R
New	<i>Xwmc815-3B</i> {10125}	3B	WMC815F / WMC815R
New	<i>Xwmc827-3B</i> {10125}	3B	WMC827F / WMC827R
<b>Group 3DS</b>			
Add reference	<i>Xbarc321-3D</i> {10124}	3DS	BARC321F / BARC321R
Add to 3DL	<i>Xbarc6-3D</i> {10124}	3DS	BARC6F / BARC6R
Add reference	<i>Xbarc8-3D</i> {10124}	3DS	BARC8F / BARC8R
New	<i>Xbarc1040-3D</i> {10124}	3DS	BARC1040F / BARC1040R



New	<i>Xbarc1119-3D</i> {10124}	3DS	BARC1119F / BARC1119R
New	<i>Xbarc132-3D</i> {10124}	3DS	BARC132F / BARC132R
New	<i>Xbarc135-3D</i> {10124}	3DS	BARC135F / BARC135R
New	<i>Xbarc150-3D</i> {10124}	3DS	BARC150F / BARC150R
Change 3DL to 3DS	<i>Xcfd2-3D</i> {10126}	3DS	CFD2F / CFD2R
Change 3DL to 3DS	<i>Xgpw1168-3D</i> {10126}	3DS	GPW1168F / GPW1168R
Change 3DL to 3DS	<i>Xgwm341-3D</i> {10126}	3DS	WMS341F / WMS341R
<b>Group 3DL</b>			
Add reference	<i>Xbarc270-3D</i> {10124}	3DL	BARC270F / BARC270R
Add reference	<i>Xbarc323-3D</i> {10124}	3DL	BARC323F / BARC323R
Add reference	<i>Xbarc42-3D</i> {10124}	3DL	BARC42F / BARC42R
New	<i>Xbarc1162-3D</i> {10124}	3DL	BARC1162F / BARC1162R
New	<i>Xbarc71-3D</i> {10124}	3DL	BARC71F / BARC71R
<b>Group 3D</b>			
New	<i>Xbarc1161-3D</i> {10124}	3D	BARC1161F / BARC1161R
New	<i>Xbarc125-3D</i> {10125}	3D	BARC125F / BARC125R
New	<i>Xbarc128-3D</i> {10125}	3D	BARC128F / BARC128R
New	<i>Xbarc226-3D</i> {10124}	3D	BARC226F / BARC226R
New	<i>Xbarc52-3D</i> {10125}	3D	BARC52F / BARC52R
New	<i>Xbarc68-3D</i> {10125}	3D	BARC68F / BARC68R
New	<i>Xcfd193-3D</i> {10125}	3D	CFD193F / CFD193R
New	<i>Xcfd62-3D</i> {10125}	3D	CFD62F / CFD62R
New	<i>Xcfd71-3D</i> {10125}	3D	CFD71F / CFD71R
New	<i>Xgdm136-3D</i> {10125}	3D	DMS136F / DMS136R
New	<i>Xgdm99-3D</i> {10125}	3D	DMS99F / DMS99R
New	<i>Xgwm191-3D</i> {10125}	3D	WMS191F / WMS191R
New	<i>Xwmc492-3D</i> {10125}	3D	WMC492F / WMC492R
New	<i>Xwmc549-3D</i> {10125}	3D	WMC549F / WMC549R
New	<i>Xwmc552-3D</i> {10125}	3D	WMC552F / WMC552R
New	<i>Xwmc630-3D</i> {10125}	3D	WMC630F / WMC630R
New	<i>Xwmc631-3D</i> {10125}	3D	WMC631F / WMC631R

New	<i>Xwmc656-3D</i> {10125}	3D	WMC656F / WMC656R
New	<i>Xwmc674-3D</i> {10125}	3D	WMC674F / WMC674R
New	<i>Xwmc741-3D</i> {10125}	3D	WMC741F / WMC741R
<b>Group 4AS</b>			
Add reference	<i>Xbarc206-4A</i> {10124}	4AS	BARC206F / BARC206R
New	<i>Xbarc1052-4A</i> {10124}	4AS	BARC1052F / BARC1052R
New	<i>Xbarc1137-4A</i> {10124}	4AS	BARC1137F / BARC1137R
New	<i>Xbarc155-4A</i> {10124}	4AS	BARC155F / BARC155R
New	<i>Xbarc224-4A</i> {10124}	4AS	BARC224F / BARC224R
New	<i>Xcfa2256-4A</i> {10126}	4AS	CFA2256F / CFA2256R
New	<i>Xcfa2026-4A</i> {10126}	4AS	CFA2026F / CFA2026R
Add to 7DS, 7AL	<i>Xcfa2174-4A</i> {10126}	4AS	CFA2174F / CFA2174R
Add to 2AL	<i>Xcfa2121-4A</i> {10126}	4AS	CFA2121F / CFA2121R
Change 4A to 4AS	<i>Xcfd16-4A</i> {10126}	4AS	CFD16F / CFD16R
<b>Group 4AL</b>			
Change 4AS to 4AL	<i>Xbarc106-4A</i> {10124{10126}}	4AL	BARC106F / BARC106R
Add reference	<i>Xbarc153-4A</i> {10124}	4AL	BARC153F / BARC153R
Add reference	<i>Xbarc170-4A</i> {10124}	4AL	BARC170F / BARC170R
Add reference	<i>Xbarc184-4A</i> {10124}	4AL	BARC184F / BARC184R
Add reference	<i>Xbarc315-4A</i> {10124}	4AL	BARC315F / BARC315R
Add reference	<i>Xbarc327-4A</i> {10124}	4AL	BARC327F / BARC327R
Add reference	<i>Xbarc343-4A</i> {10124}	4AL	BARC343F / BARC343R
Add reference	<i>Xbarc52-4A</i> {10124}	4AL	BARC52F / BARC52R
Add reference	<i>Xbarc70-4A</i> {10124}	4AL	BARC70F / BARC70R
Add reference	<i>Xbarc78-4A</i> {10124}	4AL	BARC78F / BARC78R
New	<i>Xbarc1047-4A</i> {10124}	4AL	BARC1047F / BARC1047R
Add to 4D	<i>Xcfa2173-4A</i> {10126}	4AL	CFA2173F / CFA2173R
Add to 7DS	<i>Xcfd31-4A</i> {10126}	4AL	CFD31F / CFD31R
Change 4AS to 4AL	<i>Xgwm601-4A</i> {10126}	4AL	WMS601F / WMS601R
Add to 7DS	<i>Xgpw1142-4A</i> {10126}	4AL	GPW1142F / GPW1142R
<b>Group 4A</b>			
Add reference	<i>Xbarc138-4A</i> {10124}	4A	BARC138F / BARC138R

New	<i>Xbarc1070-4A</i> {10124}	4A	BARC1070F / BARC1070R
New	<i>Xbarc190-4A</i> {10124}	4A	BARC190F / BARC190R
New	<i>Xbarc216-4A</i> {10124}	4A	BARC216F / BARC216R
New	<i>Xbarc233-4A</i> {10124}	4A	BARC233F / BARC233R
New	<i>Xcfa2256-4A</i> {10125}	4A	CFA2256F / CFA2256R
New	<i>Xcfd30-4A</i> {10125}	4A	CFD30F / CFD30R
New	<i>Xgwm162-4A</i> {10125}	4A	WMS162F / WMS162R
New	<i>Xgwm44-4A</i> {10125}	4A	WMS44F / WMS44R
New	<i>Xgwm494-4A</i> {10125}	4A	WMS494F / WMS494R
New	<i>Xgwm565-4A</i> {10125}	4A	WMS565F / WMS565R
New	<i>Xwmc15-4A</i> {10125}	4A	WMC15F / WMC15R
New	<i>Xwmc446-4A</i> {10125}	4A	WMC446F / WMC446R
New	<i>Xwmc516-4A</i> {10125}	4A	WMC516F / WMC516R
New	<i>Xwmc597-4A</i> {10125}	4A	WMC597F / WMC597R
New	<i>Xwmc617-4A</i> {10125}	4A	WMC617F / WMC617R
New	<i>Xwmc650-4A</i> {10125}	4A	WMC650F / WMC650R
New	<i>Xwmc680-4A</i> {10125}	4A	WMC680F / WMC680R
New	<i>Xwmc698-4A</i> {10125}	4A	WMC698F / WMC698R
New	<i>Xwmc707-4A</i> {10125}	4A	WMC707F / WMC707R
New	<i>Xwmc718-4A</i> {10125}	4A	WMC718F / WMC718R
New	<i>Xwmc722-4A</i> {10125}	4A	WMC722F / WMC722R
New	<i>Xwmc757-4A</i> {10125}	4A	WMC757F / WMC757R
New	<i>Xwmc760-4A</i> {10125}	4A	WMC760F / WMC760R
New	<i>Xwmc776-4A</i> {10125}	4A	WMC776F / WMC776R
<b>Group 4BS</b>			
Add reference	<i>Xbarc193-4B</i> {10124}	4BS	BARC193F / BARC193R
Add reference	<i>Xbarc292-4B</i> {10124}	4BS	BARC292F / BARC292R
New	<i>Xbarc1001-4B</i> {10124}	4BS	BARC1001F / BARC1001R
New	<i>Xbarc1045-4B</i> {10124}	4BS	BARC1045F / BARC1045R
New	<i>Xbarc20-4B</i> {10124}	4BS	BARC20F / BARC20R
<b>Group 4BL</b>			
Add reference	<i>Xbarc163-4B</i> {10124}	4BL	BARC163F / BARC163R
Add reference	<i>Xbarc60-4B</i> {10124}	4BL	BARC60F / BARC60R

New	<i>Xbarc1096-4B</i> {10124}	4BL	BARC1096F / BARC1096R
New	<i>Xbarc114-4B</i> {10124}	4BL	BARC114F / BARC114R
New	<i>Xbarc1174-4B</i> {10124}	4BL	BARC1174F / BARC1174R
New	<i>Xbarc199-4B</i> {10124}	4BL	BARC199F / BARC199R
New	<i>Xbarc227-4B</i> {10124}	4BL	BARC227F / BARC227R
<b>Group 4B</b>			
New	<i>Xbarc10-4B</i> {10125}	4B	BARC10F / BARC10R
New	<i>Xbarc109-4B</i> {10125}	4B	BARC109F / BARC109R
New	<i>Xbarc1142-4B</i> {10124}	4B	BARC1142F / BARC1142R
New	<i>Xbarc25-4B</i> {10125}	4B	BARC25F / BARC25R
New	<i>Xbarc68-4B</i> {10125}	4B	BARC68F / BARC68R
New	<i>Xcfd2-4B</i> {10125}	4B	CFD2F / CFD2R
New	<i>Xgwm112-4B</i> {10125}	4B	WMS112F / WMS112R
New	<i>Xgwm193-4B</i> {10125}	4B	WMS193F / WMS193R
New	<i>Xgwm261-4B</i> {10125}	4B	WMS261F / WMS261R
New	<i>Xgwm540-4B</i> {10125}	4B	WMS540F / WMS540R
New	<i>Xgwm664-4B</i> {10125}	4B	WMS664F / WMS664R
New	<i>Xwmc16-4B</i> {10125}	4B	WMC16F / WMC16R
New	<i>Xwmc413-4B</i> {10125}	4B	WMC413F / WMC413R
New	<i>Xwmc419-4B</i> {10125}	4B	WMC419F / WMC419R
New	<i>Xwmc546-4B</i> {10125}	4B	WMC546F / WMC546R
New	<i>Xwmc617-4B</i> {10125}	4B	WMC617F / WMC617R
New	<i>Xwmc652-4B</i> {10125}	4B	WMC652F / WMC652R
New	<i>Xwmc657-4B</i> {10125}	4B	WMC657F / WMC657R
New	<i>Xwmc679-4B</i> {10125}	4B	WMC679F / WMC679R
New	<i>Xwmc692-4B</i> {10125}	4B	WMC692F / WMC692R
New	<i>Xwmc695-4B</i> {10125}	4B	WMC695F / WMC695R
New	<i>Xwmc710-4B</i> {10125}	4B	WMC710F / WMC710R
New	<i>Xwmc826-4B</i> {10125}	4B	WMC826F / WMC826R
<b>Group 4DS</b>			
Add arm	<i>Xbarc288-4D</i> {10124}	4DS	BARC288F / BARC288R
Add reference	<i>Xbarc217-4D</i> {10124}	4DS	BARC217F / BARC217R
Add reference	<i>Xbarc225.1-4D</i> {10124}	4DS	BARC225.1F / BARC225.1R

Add reference	<i>Xbarc308-4D</i> {10124}	4DS	BARC308F / BARC308R
Add reference	<i>Xbarc334-4D</i> {10124}	4DS	BARC334F / BARC334R
Add reference	<i>Xbarc98-4D</i> {10124}	4DS	BARC98F / BARC98R
New	<i>Xbarc105-4D</i> {10124}	4DS	BARC105F / BARC105R
New	<i>Xbarc1118-4D</i> {10124}	4DS	BARC1118F / BARC1118R
<b>Group 4DL</b>			
Add reference	<i>Xbarc48-4D</i> {10124}	4DL	BARC48F / BARC48R
New	<i>Xbarc1069-4D</i> {10124}	4DL	BARC1069F / BARC1069R
New	<i>Xbarc114-4D</i> {10124}	4DL	BARC114F / BARC114R
New	<i>Xbarc1148-4D</i> {10124}	4DL	BARC1148F / BARC1148R
New	<i>Xbarc1183-4D</i> {10124}	4DL	BARC1183F / BARC1183R
New	<i>Xbarc225.2-4D</i> {10124}	4DL	BARC225.2F / BARC225.2R
New	<i>Xbarc93-4D</i> {10124}	4DL	BARC93F / BARC93R
<b>Group 4D</b>			
New	<i>Xbarc1145-4D</i> {10124}	4D	BARC1145F / BARC1145R
New	<i>Xbarc27-4D</i> {10124}	4D	BARC27F / BARC27R
New	<i>Xbarc91-4D</i> {10125}	4D	BARC91F / BARC91R
New	<i>Xcfd160-4D</i> {10125}	4D	CFD160F / CFD160R
New	<i>Xgwm133-4D</i> {10125}	4D	WMS133F / WMS133R
New	<i>Xgwm193-4D</i> {10125}	4D	WMS193F / WMS193R
New	<i>Xgwm213-4D</i> {10125}	4D	WMS213F / WMS213R
New	<i>Xwmc182-4D</i> {10125}	4D	WMC182F / WMC182R
New	<i>Xwmc33-4D</i> {10125}	4D	WMC33F / WMC33R
New	<i>Xwmc489-4D</i> {10125}	4D	WMC489F / WMC489R
New	<i>Xwmc617-4D</i> {10125}	4D	WMC617F / WMC617R
New	<i>Xwmc622-4D</i> {10125}	4D	WMC622F / WMC622R
New	<i>Xwmc720-4D</i> {10125}	4D	WMC720F / WMC720R
New	<i>Xwmc818-4D</i> {10125}	4D	WMC818F / WMC818R
New	<i>Xwmc825-4D</i> {10125}	4D	WMC825F / WMC825R
<b>Group 5AS</b>			
Add reference	<i>Xbarc186.1-5A</i> {10124}	5AS	BARC186.1F / BARC186.1R
Add reference	<i>Xbarc117-5A</i> {10124}	5AS	BARC117F / BARC117R
Add reference	<i>Xbarc122.1-5A</i> {10124}	5AS	BARC122.1F / BARC122.1R
Add reference	<i>Xbarc180-5A</i> {10124}	5AS	BARC180F / BARC180R
Add reference	<i>Xbarc303-5A</i> {10124}	5AS	BARC303F / BARC303R

Add reference	<i>Xbarc316-5A</i> {10124}	5AS	BARC316F / BARC316R
New	<i>Xbarc56-5A</i> {10124}	5AS	BARC56F / BARC56R
<b>Group 5AL</b>			
Add reference	<i>Xbarc1-5A</i> {10124}	5AL	BARC1F / BARC1R
Add reference	<i>Xbarc100-5A</i> {10124}	5AL	BARC100F / BARC100R
Add reference	<i>Xbarc141-5A</i> {10124}	5AL	BARC141F / BARC141R
Add reference	<i>Xbarc151-5A</i> {10124}	5AL	BARC151F / BARC151R
Add reference	<i>Xbarc165-5A</i> {10124}	5AL	BARC165F / BARC165R
Add reference	<i>Xbarc197-5A</i> {10124}	5AL	BARC197F / BARC197R
Add reference	<i>Xbarc230-5A</i> {10124}	5AL	BARC230F / BARC230R
Add reference	<i>Xbarc319-5A</i> {10124}	5AL	BARC319F / BARC319R
Add reference	<i>Xbarc330-5A</i> {10124}	5AL	BARC330F / BARC330R
Add reference	<i>Xbarc360-5A</i> {10124}	5AL	BARC360F / BARC360R
Add reference	<i>Xbarc40-5A</i> {10124}	5AL	BARC40F / BARC40R
New	<i>Xbarc1135-5A</i> {10124}	5AL	BARC1135F / BARC1135R
New	<i>Xbarc115-5A</i> {10124}	5AL	BARC115F / BARC115R
New	<i>Xbarc1158-5A</i> {10124}	5AL	BARC1158F / BARC1158R
New	<i>Xbarc1182-5A</i> {10124}	5AL	BARC1182F / BARC1182R
New	<i>Xbarc122.2-5A</i> {10124}	5AL	BARC122.2F / BARC122.2R
New	<i>Xbarc144-5A</i> {10124}	5AL	BARC144F / BARC144R
New	<i>Xbarc155-5A</i> {10124}	5AL	BARC155F / BARC155R
New	<i>Xbarc186.2-5A</i> {10124}	5AL	BARC186.2F / BARC186.2R
New	<i>Xbarc207-5A</i> {10124}	5AL	BARC207F / BARC207R
New	<i>Xbarc92-5A</i> {10124}	5AL	BARC92F / BARC92R
New	<i>Xbarc94-5A</i> {10124}	5AL	BARC94F / BARC94R
<b>Group 5A</b>			
New	<i>Xbarc10-5A</i> {10125}	5A	BARC10F / BARC10R
New	<i>Xbarc232-5A</i> {10125}	5A	BARC232F / BARC232R
New	<i>Xcfa2104-5A</i> {10125}	5A	CFA2104F / CFA2104R
New	<i>Xcfa2121-5A</i> {10125}	5A	CFA2121F / CFA2121R
New	<i>Xcfa2185-5A</i> {10125}	5A	CFA2185F / CFA2185R
New	<i>Xcfa2250-5A</i> {10125}	5A	CFA2250F / CFA2250R
New	<i>Xcfd2-5A</i> {10125}	5A	CFD2F / CFD2R

New	<i>Xgwm96-5A</i> {10125}	5A	WMS96F / WMS96R
New	<i>Xwmc445-5A</i> {10125}	5A	WMC445F / WMC445R
New	<i>Xwmc446-5A</i> {10125}	5A	WMC446F / WMC446R
New	<i>Xwmc475-5A</i> {10125}	5A	WMC475F / WMC475R
New	<i>Xwmc47-5A</i> {10125}	5A	WMC47F / WMC47R
New	<i>Xwmc492-5A</i> {10125}	5A	WMC492F / WMC492R
New	<i>Xwmc51-5A</i> {10125}	5A	WMC51F / WMC51R
New	<i>Xwmc524-5A</i> {10125}	5A	WMC524F / WMC524R
New	<i>Xwmc577-5A</i> {10125}	5A	WMC577F / WMC577R
New	<i>Xwmc630-5A</i> {10125}	5A	WMC630F / WMC630R
New	<i>Xwmc654-5A</i> {10125}	5A	WMC654F / WMC654R
New	<i>Xwmc705-5A</i> {10125}	5A	WMC705F / WMC705R
New	<i>Xwmc713-5A</i> {10125}	5A	WMC713F / WMC713R
New	<i>Xwmc727-5A</i> {10125}	5A	WMC727F / WMC727R
New	<i>Xwmc752-5A</i> {10125}	5A	WMC752F / WMC752R
New	<i>Xwmc795-5A</i> {10125}	5A	WMC795F / WMC795R
New	<i>Xwmc805-5A</i> {10125}	5A	WMC805F / WMC805R
<b>Group 5BS</b>			
Add reference	<i>Xbarc216-5B</i> {10124}	5BS	BARC216F / BARC216R
Add reference	<i>Xbarc32.1-5B</i> {10124}	5BS	BARC32.1F / BARC32.1R
Add reference	<i>Xbarc340-5B</i> {10124}	5BS	BARC340F / BARC340R
Add reference	<i>Xbarc4-5B</i> {10124}	5BS	BARC4F / BARC4R
New	<i>Xbarc1120-5B</i> {10124}	5BS	BARC1120F / BARC1120R
<b>Group 5BL</b>			
Add reference	<i>Xbarc140-5B</i> {10124}	5BL	BARC140F / BARC140R
Add reference	<i>Xbarc142-5B</i> {10124}	5BL	BARC142F / BARC142R
Add reference	<i>Xbarc156-5B</i> {10124}	5BL	BARC156F / BARC156R
Add reference	<i>Xbarc232-5B</i> {10124}	5BL	BARC232F / BARC232R
Add reference	<i>Xbarc308-5B</i> {10124}	5BL	BARC308F / BARC308R
Add reference	<i>Xbarc59-5B</i> {10124}	5BL	BARC59F / BARC59R
Add reference	<i>Xbarc69-5B</i> {10124}	5BL	BARC69F / BARC69R
Add reference	<i>Xbarc74-5B</i> {10124}	5BL	BARC74F / BARC74R
Add reference	<i>Xbarc89-5B</i> {10124}	5BL	BARC89F / BARC89R

New	<i>Xbarc1032-5B</i> {10124}	5BL	BARC1032F / BARC1032R
New	<i>Xbarc1061-5B</i> {10124}	5BL	BARC1061F / BARC1061R
New	<i>Xbarc11-5B</i> {10124}	5BL	BARC11F / BARC11R
New	<i>Xbarc1172-5B</i> {10124}	5BL	BARC1172F / BARC1172R
New	<i>Xbarc243-5B</i> {10124}	5BL	BARC243F / BARC243R
New	<i>Xbarc32.2-5B</i> {10124}	5BL	BARC32.2F / BARC32.2R
New	<i>Xbarc58-5B</i> {10124}	5BL	BARC58F / BARC58R
New	<i>Xbarc88-5B</i> {10124}	5BL	BARC88F / BARC88R
New	<i>Xfcc1</i> {10207}	5BL	Probe FCC1
New	<i>Xfcc2</i> {10207}	5BL	Probe FCC2
New	<i>Xfcc3</i> {10207}	5BL	Probe FCC3
New	<i>Xfcg1</i> {10207}	5BL	Probe FCG1
New	<i>Xfcg2</i> {10207}	5BL	Probe FCG2
New	<i>Xfcg3</i> {10207}	5BL	Probe FCG3
New	<i>Xfcg4</i> {10207}	5BL	Probe FCG4
New	<i>Xfcg5</i> {10207}	5BL	Probe FCG5
New	<i>Xfcg6</i> {10207}	5BL	Probe FCG6
New	<i>Xfcg7</i> {10207}	5BL	Probe FCG7
New	<i>Xfcg8</i> {10207}	5BL	Probe FCG8
New	<i>Xfcg9</i> {10207}	5BL	Probe FCG9
New	<i>Xfcg10</i> {10207}	5BL	Probe FCG10
New	<i>Xfcg11</i> {10207}	5BL	Probe FCG11
New	<i>Xfcg12</i> {10207}	5BL	Probe FCG12
New	<i>Xfcg13</i> {10207}	5BL	Probe FCG13
New	<i>Xfcg14</i> {10207}	5BL	Probe FCG14
New	<i>Xfcg15</i> {10207}	5BL	Probe FCG15
New	<i>Xfcg16</i> {10207}	5BL	Probe FCG16
New	<i>Xfcg17</i> {10207}	5BL	Probe FCG17
New	<i>Xfcg19</i> {10207}	5BL	Probe FCG19
<b>Group 5B</b>			
Add reference	<i>Xbarc109-5B</i> {10124}	5B	BARC109F / BARC109R
New	<i>Xbarc21-5B</i> {10125}	5B	BARC21F / BARC21R
New	<i>Xbarc240-5B</i> {10125}	5B	BARC240F / BARC240R



New	<i>Xcfa2121.1-5B</i> {10125}	5B	CFA2121.1F / CFA2121.1R
New	<i>Xcfa2121.2-5B</i> {10125}	5B	CFA2121.2F / CFA2121.2R
New	<i>Xcfd20-5B</i> {10125}	5B	CFD20F / CFD20R
New	<i>Xcfd5-5B</i> {10125}	5B	CFD5F / CFD5R
New	<i>Xcfd60-5B</i> {10125}	5B	CFD60F / CFD60R
New	<i>Xgdm116-5B</i> {10125}	5B	DMS116F / DMS116R
New	<i>Xgwm133-5B</i> {10125}	5B	WMS133F / WMS133R
New	<i>Xwmc160-5B</i> {10125}	5B	WMC160F / WMC160R
New	<i>Xwmc258-5B</i> {10125}	5B	WMC258F / WMC258R
New	<i>Xwmc274-5B</i> {10125}	5B	WMC274F / WMC274R
New	<i>Xwmc326-5B</i> {10125}	5B	WMC326F / WMC326R
New	<i>Xwmc386-5B</i> {10125}	5B	WMC386F / WMC386R
New	<i>Xwmc405-5B</i> {10125}	5B	WMC405F / WMC405R
New	<i>Xwmc430-5B</i> {10125}	5B	WMC430F / WMC430R
New	<i>Xwmc47-5B</i> {10125}	5B	WMC47F / WMC47R
New	<i>Xwmc616-5B</i> {10125}	5B	WMC616F / WMC616R
New	<i>Xwmc630-5B</i> {10125}	5B	WMC630F / WMC630R
New	<i>Xwmc640-5B</i> {10125}	5B	WMC640F / WMC640R
New	<i>Xwmc682-5B</i> {10125}	5B	WMC682F / WMC682R
New	<i>Xwmc728-5B</i> {10125}	5B	WMC728F / WMC728R
New	<i>Xwmc734-5B</i> {10125}	5B	WMC734F / WMC734R
New	<i>Xwmc740-5B</i> {10125}	5B	WMC740F / WMC740R
New	<i>Xwmc745-5B</i> {10125}	5B	WMC745F / WMC745R
New	<i>Xwmc759-5B</i> {10125}	5B	WMC759F / WMC759R
New	<i>Xwmc773-5B</i> {10125}	5B	WMC773F / WMC773R
New	<i>Xwmc783-5B</i> {10125}	5B	WMC783F / WMC783R
New	<i>Xwmc810-5B</i> {10125}	5B	WMC810F / WMC810R
New	<i>Xwmc813-5B</i> {10125}	5B	WMC813F / WMC813R
<b>Group 5DS</b>			
Add reference	<i>Xbarc130-5D</i> {10124}	5DS	BARC130F / BARC130R
Add reference	<i>Xbarc143-5D</i> {10124}	5DS	BARC143F / BARC143R
Add reference	<i>Xbarc205-5D</i> {10124}	5DS	BARC205F / BARC205R
<b>Group 5DL</b>			

Add reference	<i>Xbarc110-5D</i> {10124}	5DL	BARC110F / BARC110R
Add reference	<i>Xbarc144-5D</i> {10124}	5DL	BARC144F / BARC144R
Add reference	<i>Xbarc177-5D</i> {10124}	5DL	BARC177F / BARC177R
Add reference	<i>Xbarc286-5D</i> {10124}	5DL	BARC286F / BARC286R
Add reference	<i>Xbarc320-5D</i> {10124}	5DL	BARC320F / BARC320R
Add reference	<i>Xbarc347-5D</i> {10124}	5DL	BARC347F / BARC347R
Add reference	<i>Xbarc361-5D</i> {10124}	5DL	BARC361F / BARC361R
Add reference	<i>Xbarc44-5D</i> {10124}	5DL	BARC44F / BARC44R
Add reference	<i>Xbarc93-5D</i> {10124}	5DL	BARC93F / BARC93R
New	<i>Xbarc1002-5D</i> {10124}	5DL	BARC1002F / BARC1002R
New	<i>Xbarc1018-5D</i> {10124}	5DL	BARC1018F / BARC1018R
New	<i>Xbarc133-5D</i> {10126}	5DL	BARC133F / BARC133R
New	<i>Xbarc322-5D</i> {10124}	5DL	BARC322F / BARC322R
<b>Group 5D</b>			
New	<i>Xbarc1097-5D</i> {10124}	5D	BARC1097F / BARC1097R
New	<i>Xbarc1117-5D</i> {10124}	5D	BARC1117F / BARC1117R
New	<i>Xbarc140-5D</i> {10125}	5D	BARC140F / BARC140R
New	<i>Xbarc232-5D</i> {10125}	5D	BARC232F / BARC232R
New	<i>Xbarc234-5D</i> {10124}	5D	BARC234F / BARC234R
New	<i>Xbarc49-5D</i> {10125}	5D	BARC49F / BARC49R
New	<i>Xcfd102-5D</i> {10125}	5D	CFD102F / CFD102R
New	<i>Xcfd156-5D</i> {10125}	5D	CFD156F / CFD156R
New	<i>Xcfd183-5D</i> {10125}	5D	CFD183F / CFD183R
New	<i>Xcfd266-5D</i> {10125}	5D	CFD266F / CFD266R
New	<i>Xcfd283-5D</i> {10125}	5D	CFD283F / CFD283R
New	<i>Xcfd37-5D</i> {10125}	5D	CFD37F / CFD37R
New	<i>Xgdm133-5D</i> {10125}	5D	DMS133F / DMS133R
New	<i>Xgdm138-5D</i> {10125}	5D	DMS138F / DMS138R
New	<i>Xgwm159-5D</i> {10125}	5D	WMS159F / WMS159R
New	<i>Xgwm469-5D</i> {10125}	5D	WMS469F / WMS469R
New	<i>Xwmc264-5D</i> {10125}	5D	WMC264F / WMC264R
New	<i>Xwmc405-5D</i> {10125}	5D	WMC405F / WMC405R
New	<i>Xwmc443-5D</i> {10125}	5D	WMC443F / WMC443R

New	<i>Xwmc608-5D</i> {10125}	5D	WMC608F / WMC608R
New	<i>Xwmc630-5D</i> {10125}	5D	WMC630F / WMC630R
New	<i>Xwmc636-5D</i> {10125}	5D	WMC636F / WMC636R
New	<i>Xwmc640-5D</i> {10125}	5D	WMC640F / WMC640R
New	<i>Xwmc765-5D</i> {10125}	5D	WMC765F / WMC765R
New	<i>Xwmc788-5D</i> {10125}	5D	WMC788F / WMC788R
New	<i>Xwmc799-5D</i> {10125}	5D	WMC799F / WMC799R
New	<i>Xwmc805-5D</i> {10125}	5D	WMC805F / WMC805R
New	<i>Xwmc818-5D</i> {10125}	5D	WMC818F / WMC818R
<b>Group 6AS</b>			
Add reference	<i>Xbarc3-6A</i> {10124}	6AS	BARC3F / BARC3R
New	<i>Xbarc48-6A</i> {10125}	6AS	BARC48F / BARC48R
<b>Group 6AL</b>			
Add arm	<i>Xbarc107-6A</i> {10124}	6AL	BARC107F / BARC107R
Add arm	<i>Xbarc113-6A</i> {10124}	6AL	BARC113F / BARC113R
Add reference	<i>Xbarc104-6A</i> {10124}	6AL	BARC104F / BARC104R
Correct	<i>Xbarc171-6A</i> {10124}	6AL	BARC171F / BARC171R
Correct	<i>Xbarc195-6A</i> {10124}	6AL	BARC195F / BARC195R
Add reference	<i>Xbarc204-6A</i> {10124}	6AL	BARC204F / BARC204R
New	<i>Xbarc1055-6A</i> {10124}	6AL	BARC1055F / BARC1055R
New	<i>Xbarc1165-6A</i> {10124}	6AL	BARC1165F / BARC1165R
New	<i>Xbarc118-6A</i> {10124}	6AL	BARC118F / BARC118R
New	<i>Xbarc165-6A</i> {10126}	6AL	BARC165F / BARC165R
New	<i>Xbarc37-6A</i> {10124}	6AL	BARC37F / BARC37R
<b>Group 6A</b>			
New	<i>Xbarc103-6A</i> {10124}	6A	BARC103F / BARC103R
New	<i>Xbarc146-6A</i> {10125}	6A	BARC146F / BARC146R
New	<i>Xbarc206-6A</i> {10125}	6A	BARC206F / BARC206R
New	<i>Xbarc23-6A</i> {10125}	6A	BARC23F / BARC23R
New	<i>Xcfd80-6A</i> {10125}	6A	CFD80F / CFD80R
New	<i>Xgwm132-6A</i> {10125}	6A	WMS132F / WMS132R
New	<i>Xwmc145-6A</i> {10125}	6A	WMC145F / WMC145R
New	<i>Xwmc150-6A</i> {10125}	6A	WMC150F / WMC150R

New	<i>Xwmc182-6A</i> {10125}	6A	WMC182F / WMC182R
New	<i>Xwmc206-6A</i> {10125}	6A	WMC206F / WMC206R
New	<i>Xwmc254-6A</i> {10125}	6A	WMC254F / WMC254R
New	<i>Xwmc398-6A</i> {10125}	6A	WMC398F / WMC398R
New	<i>Xwmc553-6A</i> {10125}	6A	WMC553F / WMC553R
New	<i>Xwmc580-6A</i> {10125}	6A	WMC580F / WMC580R
New	<i>Xwmc59-6A</i> {10125}	6A	WMC59F / WMC59R
New	<i>Xwmc621-6A</i> {10125}	6A	WMC621F / WMC621R
New	<i>Xwmc642-6A</i> {10125}	6A	WMC642F / WMC642R
New	<i>Xwmc672-6A</i> {10125}	6A	WMC672F / WMC672R
New	<i>Xwmc684-6A</i> {10125}	6A	WMC684F / WMC684R
New	<i>Xwmc748-6A</i> {10125}	6A	WMC748F / WMC748R
New	<i>Xwmc753-6A</i> {10125}	6A	WMC753F / WMC753R
New	<i>Xwmc786-6A</i> {10125}	6A	WMC786F / WMC786R
New	<i>Xwmc807-6A</i> {10125}	6A	WMC807F / WMC807R
<b>Group 6BS</b>			
New	<i>Xbarc1169-6B</i> {10124}	6BS	BARC1169F / BARC1169R
New	<i>Xbarc134.1-6B</i> {10124}	6BS	BARC134.1F / BARC134.1R
New	<i>Xbarc14-6B</i> {10124}	6BS	BARC14F / BARC14R
New	<i>Xbarc198-6B</i> {10124}	6BS	BARC198F / BARC198R
New	<i>Xbarc211-6B</i> {10124}	6BS	BARC211F / BARC211R
New	<i>Xbarc48-6B</i> {10124}	6BS	BARC48F / BARC48R
<b>Group 6BL</b>			
Add reference	<i>Xbarc134.2-6B</i> {10124}	6BL	BARC134.2F / BARC134.2R
Add reference	<i>Xbarc178-6B</i> {10124}	6BL	BARC178F / BARC178R
Add reference	<i>Xbarc24-6B</i> {10124}	6BL	BARC24F / BARC24R
Add reference	<i>Xbarc354-6B</i> {10124}	6BL	BARC354F / BARC354R
New	<i>Xbarc180-6B</i> {10124}	6BL	BARC180F / BARC180R
New	<i>Xbarc223-6B</i> {10124}	6BL	BARC223F / BARC223R
<b>Group 6B</b>			
Add reference	<i>Xbarc79-6B</i> {10124}	6B	BARC79F / BARC79R
New	<i>Xbarc1117-6B</i> {10124}	6B	BARC1117F / BARC1117R
New	<i>Xbarc112-6B</i> {10124}	6B	BARC112F / BARC112R

New	<i>Xbarc127-6B</i> {10125}	6B	BARC127F / BARC127R
New	<i>Xbarc136-6B</i> {10124}	6B	BARC136F / BARC136R
New	<i>Xbarc146-6B</i> {10125}	6B	BARC146F / BARC146R
New	<i>Xbarc185-6B</i> {10124}	6B	BARC185F / BARC185R
New	<i>Xbarc76-6B</i> {10125}	6B	BARC76F / BARC76R
New	<i>Xcfa2110-6B</i> {10125}	6B	CFA2110F / CFA2110R
New	<i>Xcfd1-6B</i> {10125}	6B	CFD1F / CFD1R
New	<i>Xgwm273-6B</i> {10125}	6B	WMS273F / WMS273R
New	<i>Xgwm311-6B</i> {10125}	6B	WMS311F / WMS311R
New	<i>Xgwm705-6B</i> {10125}	6B	WMS705F / WMS705R
New	<i>Xwmc152-6B</i> {10125}	6B	WMC152F / WMC152R
New	<i>Xwmc179-6B</i> {10125}	6B	WMC179F / WMC179R
New	<i>Xwmc398-6B</i> {10125}	6B	WMC398F / WMC398R
New	<i>Xwmc419-6B</i> {10125}	6B	WMC419F / WMC419R
New	<i>Xwmc473-6B</i> {10125}	6B	WMC473F / WMC473R
New	<i>Xwmc487-6B</i> {10125}	6B	WMC487F / WMC487R
New	<i>Xwmc539-6B</i> {10125}	6B	WMC539F / WMC539R
New	<i>Xwmc597-6B</i> {10125}	6B	WMC597F / WMC597R
New	<i>Xwmc726-6B</i> {10125}	6B	WMC726F / WMC726R
New	<i>Xwmc737-6B</i> {10125}	6B	WMC737F / WMC737R
New	<i>Xwmc748-6B</i> {10125}	6B	WMC748F / WMC748R
New	<i>Xwmc756-6B</i> {10125}	6B	WMC756F / WMC756R
New	<i>Xwmc786-6B</i> {10125}	6B	WMC786F / WMC786R
New	<i>Xwmc79-6B</i> {10125}	6B	WMC79F / WMC79R
<b>Group 6DS</b>			
Add reference	<i>Xbarc123-6D</i> {10124}	6DS	BARC123F / BARC123R
Add reference	<i>Xbarc173-6D</i> {10124}	6DS	BARC173F / BARC173R
Add reference	<i>Xbarc183-6D</i> {10124}	6DS	BARC183F / BARC183R
Add reference	<i>Xbarc196-6D</i> {10124}	6DS	BARC196F / BARC196R
<b>Group 6DL</b>			
Add reference	<i>Xbarc1121-6D</i> {10124}	6DL	BARC1121F / BARC1121R
Add referente	<i>Xbarc175-6D</i> {10124}	6DL	BARC175F / BARC175R
Correct	<i>Xbarc202-6D</i> {10124}	6DL	BARC202F / BARC202R

Add referente	<i>Xbarc204-6D</i> {10124}	6DL	BARC204F / BARC204R
Add referente	<i>Xbarc21-6D</i> {10124}	6DL	BARC21F / BARC21R
Correct	<i>Xbarc23.1-6D</i> {10124}	6DL	BARC23.1F / BARC23.1R
Correct	<i>Xbarc23.2-6D</i> {10124}	6DL	BARC23.2F / BARC23.2R
Add referente	<i>Xbarc273-6D</i> {10124}	6DL	BARC273F / BARC273R
New	<i>Xbarc1030-6D</i> {10124}	6DL	BARC1030F / BARC1030R
New	<i>Xbarc146-6D</i> {10124}	6DL	BARC146F / BARC146R
New	<i>Xbarc96-6D</i> {10124}	6DL	BARC96F / BARC96R
<b>Group 6D</b>			
New	<i>Xbarc1087-6D</i> {10124}	6D	BARC1087F / BARC1087R
New	<i>Xbarc112-6D</i> {10124}	6D	BARC112F / BARC112R
New	<i>Xbarc1145-6D</i> {10124}	6D	BARC1145F / BARC1145R
New	<i>Xbarc5-6D</i> {10125}	6D	BARC5F / BARC5R
New	<i>Xbarc54-6D</i> {10125}	6D	BARC54F / BARC54R
New	<i>Xcfd119-6D</i> {10125}	6D	CFD119F / CFD119R
New	<i>Xcfd1-6D</i> {10125}	6D	CFD1F / CFD1R
New	<i>Xcfd190-6D</i> {10125}	6D	CFD190F / CFD190R
New	<i>Xgwm133-6D</i> {10125}	6D	WMS133F / WMS133R
New	<i>Xwmc469-6D</i> {10125}	6D	WMC469F / WMC469R
New	<i>Xwmc748-6D</i> {10125}	6D	WMC748F / WMC748R
New	<i>Xwmc749-6D</i> {10125}	6D	WMC749F / WMC749R
New	<i>Xwmc753-6D</i> {10125}	6D	WMC753F / WMC753R
New	<i>Xwmc773-6D</i> {10125}	6D	WMC773F / WMC773R
New	<i>Xwmc786-6D</i> {10125}	6D	WMC786F / WMC786R
New	<i>Xwmc822-6D</i> {10125}	6D	WMC822F / WMC822R
<b>Group 7AS</b>			
New	<i>Xbarc1005-7A</i> {10124}	7AS	BARC1005F / BARC1005R
New	<i>Xbarc1025-7A</i> {10124}	7AS	BARC1025F / BARC1025R
New	<i>Xbarc1034-7A</i> {10124}	7AS	BARC1034F / BARC1034R
New	<i>Xbarc105-7A</i> {10126}	7AS	BARC105F / BARC105R
New	<i>Xbarc1088-7A</i> {10124}	7AS	BARC1088F / BARC1088R
New	<i>Xbarc1167-7A</i> {10124}	7AS	BARC1167F / BARC1167R
New	<i>Xbarc127-7A</i> {10124}	7AS	BARC127F / BARC127R
New	<i>Xbarc222-7A</i> {10124}	7AS	BARC222F / BARC222R
New	<i>Xbarc64-7A</i> {10124}	7AS	BARC64F / BARC64R

<b>Group 7AL</b>			
New	<i>Xbarc108-7A</i> {10124}	7AL	BARC108F / BARC108R
New	<i>Xbarc121-7A</i> {10124}	7AL	BARC121F / BARC121R
New	<i>Xbarc192-7A</i> {10124}	7AL	BARC192F / BARC192R
New	<i>Xbarc221-7A</i> {10124}	7AL	BARC221F / BARC221R
New	<i>Xbarc275-7A</i> {10124}	7AL	BARC275F / BARC275R
New	<i>Xbarc29-7A</i> {10124}	7AL	BARC29F / BARC29R
New	<i>Xbarc292-7A</i> {10124}	7AL	BARC292F / BARC292R
New	<i>Xbarc49-7A</i> {10124}	7AL	BARC49F / BARC49R
<b>Group 7A</b>			
New	<i>Xbarc1004-7A</i> {10124}	7A	BARC1004F / BARC1004R
New	<i>Xbarc103-7A</i> {10124}	7A	BARC103F / BARC103R
New	<i>Xbarc1087-7A</i> {10124}	7A	BARC1087F / BARC1087R
New	<i>Xbarc112-7A</i> {10124}	7A	BARC112F / BARC112R
New	<i>Xbarc1145-7A</i> {10124}	7A	BARC1145F / BARC1145R
New	<i>Xbarc151-7A</i> {10125}	7A	BARC151F / BARC151R
New	<i>Xbarc154-7A</i> {10125}	7A	BARC154F / BARC154R
New	<i>Xbarc157-7A</i> {10124}	7A	BARC157F / BARC157R
New	<i>Xbarc174-7A</i> {10125}	7A	BARC174F / BARC174R
New	<i>Xbarc195-7A</i> {10125}	7A	BARC195F / BARC195R
New	<i>Xbarc23-7A</i> {10125}	7A	BARC23F / BARC23R
New	<i>Xbarc70-7A</i> {10125}	7A	BARC70F / BARC70R
New	<i>Xcfd13-7A</i> {10125}	7A	CFD13F / CFD13R
New	<i>Xcfd193-7A</i> {10125}	7A	CFD193F / CFD193R
New	<i>Xcfd20-7A</i> {10125}	7A	CFD20F / CFD20R
New	<i>Xcfd242-7A</i> {10125}	7A	CFD242F / CFD242R
New	<i>Xgwm10-7A</i> {10125}	7A	WMS10F / WMS10R
New	<i>Xgwm4-7A</i> {10125}	7A	WMS4F / WMS4R
New	<i>Xgwm554-7A</i> {10125}	7A	WMS554F / WMS554R
New	<i>Xwmc139-7A</i> {10125}	7A	WMC139F / WMC139R
New	<i>Xwmc179-7A</i> {10125}	7A	WMC179F / WMC179R
New	<i>Xwmc488-7A</i> {10125}	7A	WMC488F / WMC488R
New	<i>Xwmc497-7A</i> {10125}	7A	WMC497F / WMC497R

New	<i>Xwmc525-7A</i> {10125}	7A	WMC525F / WMC525R
New	<i>Xwmc593-7A</i> {10125}	7A	WMC593F / WMC593R
New	<i>Xwmc596-7A</i> {10125}	7A	WMC596F / WMC596R
New	<i>Xwmc603-7A</i> {10125}	7A	WMC603F / WMC603R
New	<i>Xwmc607-7A</i> {10125}	7A	WMC607F / WMC607R
New	<i>Xwmc633-7A</i> {10125}	7A	WMC633F / WMC633R
New	<i>Xwmc646-7A</i> {10125}	7A	WMC646F / WMC646R
New	<i>Xwmc65-7A</i> {10125}	7A	WMC65F / WMC65R
New	<i>Xwmc695-7A</i> {10125}	7A	WMC695F / WMC695R
New	<i>Xwmc790-7A</i> {10125}	7A	WMC790F / WMC790R
New	<i>Xwmc809-7A</i> {10125}	7A	WMC809F / WMC809R
New	<i>Xwmc826-7A</i> {10125}	7A	WMC826F / WMC826R
<b>Group 7BS</b>			
Add reference	<i>Xbarc65.1-7B</i> {10124}	7BS	BARC65.1F / BARC65.1R
Add reference	<i>Xbarc72-7B</i> {10124}	7BS	BARC72F / BARC72R
Add reference	<i>Xbarc85.1-7B</i> {10124}	7BS	BARC85.1F / BARC85.1R
New	<i>Xbarc231-7B</i> {10124}	7BS	BARC231F / BARC231R
New	<i>Xbarc63-7B</i> {10124}	7BS	BARC63F / BARC63R
<b>Group 7BL</b>			
Add reference	<i>Xbarc176-7B</i> {10124}	7BL	BARC176F / BARC176R
Add reference	<i>Xbarc182-7B</i> {10124}	7BL	BARC182F / BARC182R
Add reference	<i>Xbarc20-7B</i> {10124}	7BL	BARC20F / BARC20R
Correct	<i>Xbarc255-7B</i> {10124}	7BL	BARC255F / BARC255R
Add reference	<i>Xbarc258-7B</i> {10124}	7BL	BARC258F / BARC258R
Correct	<i>Xbarc267-7B</i> {10124}	7BL	BARC267F / BARC267R
Add reference	<i>Xbarc278-7B</i> {10124}	7BL	BARC278F / BARC278R
Add reference	<i>Xbarc315-7B</i> {10124}	7BL	BARC315F / BARC315R
Add reference	<i>Xbarc340-7B</i> {10124}	7BL	BARC340F / BARC340R
Add reference	<i>Xbarc50-7B</i> {10124}	7BL	BARC50F / BARC50R
Add reference	<i>Xbarc90-7B</i> {10124}	7BL	BARC90F / BARC90R
New	<i>Xbarc1073-7B</i> {10124}	7BL	BARC1073F / BARC1073R
New	<i>Xbarc1181-7B</i> {10124}	7BL	BARC1181F / BARC1181R
New	<i>Xbarc219-7B</i> {10124}	7BL	BARC219F / BARC219R



New	<i>Xbarc32-7B</i> {10124}	7BL	BARC32F / BARC32R
New	<i>Xbarc65.2-7B</i> {10124}	7BL	BARC65.2F / BARC65.2R
New	<i>Xbarc82-7B</i> {10124}	7BL	BARC82F / BARC82R
New	<i>Xbarc85.2-7B</i> {10124}	7BL	BARC85.2F / BARC85.2R
<b>Group 7B</b>			
New	<i>Xbarc10-7B</i> {10125}	7B	BARC10F / BARC10R
New	<i>Xbarc1082-7B</i> {10124}	7B	BARC1082F / BARC1082R
New	<i>Xbarc112-7B</i> {10124}	7B	BARC112F / BARC112R
New	<i>Xbarc123-7B</i> {10125}	7B	BARC123F / BARC123R
New	<i>Xbarc255-7B</i> {10124}	7B	BARC255F / BARC255R
New	<i>Xbarc258-7B</i> {10124}	7B	BARC258F / BARC258R
New	<i>Xbarc94-7B</i> {10125}	7B	BARC94F / BARC94R
New	<i>Xbarc95-7B</i> {10125}	7B	BARC95F / BARC95R
New	<i>Xcfa2040-7B</i> {10125}	7B	CFA2040F / CFA2040R
New	<i>Xcfa2106-7B</i> {10125}	7B	CFA2106F / CFA2106R
New	<i>Xcfd22-7B</i> {10125}	7B	CFD22F / CFD22R
New	<i>Xgwm213-7B</i> {10125}	7B	WMS213F / WMS213R
New	<i>Xwmc218-7B</i> {10125}	7B	WMC218F / WMC218R
New	<i>Xwmc426-7B</i> {10125}	7B	WMC426F / WMC426R
New	<i>Xwmc475-7B</i> {10125}	7B	WMC475F / WMC475R
New	<i>Xwmc51-7B</i> {10125}	7B	WM51CF / WMC51R
New	<i>Xwmc546.1-7B</i> {10125}	7B	WMC546.1F / WMC546.1R
New	<i>Xwmc546.2-7B</i> {10125}	7B	WMC546.2F / WMC546.2R
New	<i>Xwmc557-7B</i> {10125}	7B	WMC557F / WMC557R
New	<i>Xwmc581-7B</i> {10125}	7B	WMC581F / WMC581R
New	<i>Xwmc606-7B</i> {10125}	7B	WMC606F / WMC606R
New	<i>Xwmc613-7B</i> {10125}	7B	WMC613F / WMC613R
New	<i>Xwmc653-7B</i> {10125}	7B	WMC653F / WMC653R
New	<i>Xwmc662-7B</i> {10125}	7B	WMC662F / WMC662R
New	<i>Xwmc696-7B</i> {10125}	7B	WMC696F / WMC696R
New	<i>Xwmc723-7B</i> {10125}	7B	WMC723F / WMC723R
New	<i>Xwmc758-7B</i> {10125}	7B	WMC758F / WMC758R
New	<i>Xwmc792-7B</i> {10125}	7B	WMC792F / WMC792R

<b>Group 7DS</b>			
Add reference	<i>Xbarc125-7D</i> {10124}	7DS	BARC125F / BARC125R
Add reference	<i>Xbarc126-7D</i> {10124}	7DS	BARC126F / BARC126R
Add reference	<i>Xbarc154-7D</i> {10124}	7DS	BARC154F / BARC154R
Add reference	<i>Xbarc214-7D</i> {10124}	7DS	BARC214F / BARC214R
Add reference	<i>Xbarc352-7D</i> {10124}	7DS	BARC352F / BARC352R
New	<i>Xbarc1033-7D</i> {10124}	7DS	BARC1033F / BARC1033R
<b>Group 7DL</b>			
Add arm	<i>Xbarc26-7D</i> {10124}	7DL	BARC26F / BARC26R
Add reference	<i>Xbarc105-7D</i> {10124}	7DL	BARC105F / BARC105R
Add reference	<i>Xbarc111-7D</i> {10124}	7DL	BARC111F / BARC111R
Add reference	<i>Xbarc121-7D</i> {10124}	7DL	BARC121F / BARC121R
Add reference	<i>Xbarc172-7D</i> {10124}	7DL	BARC172F / BARC172R
Add reference	<i>Xbarc235-7D</i> {10124}	7DL	BARC235F / BARC235R
Add reference	<i>Xbarc53-7D</i> {10124}	7DL	BARC53F / BARC53R
Add reference	<i>Xbarc76-7D</i> {10124}	7DL	BARC76F / BARC76R
New	<i>Xbarc1046-7D</i> {10124}	7DL	BARC1046F / BARC1046R
New	<i>Xbarc1075-7D</i> {10124}	7DL	BARC1075F / BARC1075R
New	<i>Xbarc97-7D</i> {10124}	7DL	BARC97F / BARC97R
<b>Group 7D</b>			
New	<i>Xbarc128-7D</i> {10125}	7D	BARC128F / BARC128R
New	<i>Xbarc184-7D</i> {10125}	7D	BARC184F / BARC184R
New	<i>Xbarc235-7D</i> {10124}	7D	BARC235F / BARC235R
New	<i>Xbarc5-7D</i> {10125}	7D	BARC5F / BARC5R
New	<i>Xbarc70-7D</i> {10125}	7D	BARC70F / BARC70R
New	<i>Xbarc87-7D</i> {10125}	7D	BARC87F / BARC87R
New	<i>Xcfa2040-7D</i> {10125}	7D	CFA2040F / CFA2040R
New	<i>Xcfd175-7D</i> {10125}	7D	CFD175F / CFD175R
New	<i>Xcfd193-7D</i> {10125}	7D	CFD193F / CFD193R
New	<i>Xcfd2.1-7D</i> {10125}	7D	CFD2.1F / CFD2.1R
New	<i>Xcfd26-7D</i> {10125}	7D	CFD26F / CFD26R
New	<i>Xcfd30-7D</i> {10125}	7D	CFD30F / CFD30R
New	<i>Xgdm145-7D</i> {10125}	7D	DMS145F / DMS145R

New	<i>Xgdm88-7D</i> {10125}	7D	DMS88F / DMS88
New	<i>Xgwm473-7D</i> {10125}	7D	WMS473F / WMS473R
New	<i>Xwmc166-7D</i> {10125}	7D	WMC166F / WMC166R
New	<i>Xwmc182-7D</i> {10125}	7D	WMC182F / WMC182R
New	<i>Xwmc221-7D</i> {10125}	7D	WMC221F / WMC221R
New	<i>Xwmc438-7D</i> {10125}	7D	WMC438F / WMC438R
New	<i>Xwmc450-7D</i> {10125}	7D	WMC450F / WMC450R
New	<i>Xwmc463-7D</i> {10125}	7D	WMC463F / WMC463R
New	<i>Xwmc488-7D</i> {10125}	7D	WMC488F / WMC488R
New	<i>Xwmc489-7D</i> {10125}	7D	WMC489F / WMC489R
New	<i>Xwmc506-7D</i> {10125}	7D	WMC506F / WMC506R
New	<i>Xwmc606-7D</i> {10125}	7D	WMC606F / WMC606R
New	<i>Xwmc629-7D</i> {10125}	7D	WMC629F / WMC629R
New	<i>Xwmc630-7D</i> {10125}	7D	WMC630F / WMC630R
New	<i>Xwmc634-7D</i> {10125}	7D	WMC634F / WMC634R
New	<i>Xwmc646-7D</i> {10125}	7D	WMC646F / WMC646R
New	<i>Xwmc653-7D</i> {10125}	7D	WMC653F / WMC653R
New	<i>Xwmc671-7D</i> {10125}	7D	WMC671F / WMC671R
New	<i>Xwmc698-7D</i> {10125}	7D	WMC698F / WMC698R
New	<i>Xwmc702-7D</i> {10125}	7D	WMC702F / WMC702R
New	<i>Xwmc797-7D</i> {10125}	7D	WMC797F / WMC797R
New	<i>Xwmc824-7D</i> {10125}	7D	WMC824F / WMC824R
New	<i>Xwmc827-7D</i> {10125}	7D	WMC827F / WMC827R

## Morphological and Physiological Traits

### 6. Awnedness

#### 6.1.2 Tipped 1

<b>BI.</b>	<b>ma:</b>	Terminally located {10189}.
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### 10. Boron Tolerance

Add at end of section: In contrast to tolerance, boron efficiency was studied in {10135}. Monogenic segregation occurred in Bonza (B inefficient) / SW 41 (moderately B inefficient) and SW 41 / Fang 60 (B efficient). Two genes, designated *Bo<sub>d1</sub>* and *Bo<sub>d2</sub>* segregated in Bonza / Fang 60.

### 9. Brittle Rachis

<i>Br-A1</i> {10182}.	<i>Br2</i> (0130).		
<i>Br-B1</i> {10182}.	<i>Br3</i> {0130}.		
<i>Br-D1</i> {10182}.	<i>Br1</i> {9970}.	<b>v:</b>	After the present entry, add: 'KU510, K/U511, KU515 {10182}.

### 17. Dormancy

QTL: Zenkoujikomugi / CS: *Qphs.ocs-3A.1* on chromosome 3AS was associated with *Xbcd1380-3A* and *Xfbb370-3A* accounting for 38% of the phenotypic variation {10195}. A weaker QTL, *Qphs.ocs-3A.2* in 3AL was not associated with *TaVp1* {10195}, the wheat orthologue of the maize transcription factor Viviparous-1.

### 20. Flowering Time

Winter wheat cross, Arina (149 days) / Forno (150 days): Six QTL detected over six environments, the 3 most important, all from Arina, were in chromosomes 6DL ( $R^2 = 16\%$ ), 3DL ( $R^2 = 14\%$ ) and 7BL ( $R^2 = 13\%$ ); 3 others in 2AL, 5BL and 6DL were from Forno (10172).

#### 27.1. Red (brown/bronze) glumes

<b>Rg2.</b>	<b>v:</b>	Synthetic Hexaploid-11 {10128}.	<b>ma:</b>	<i>Xpsp2000-1D</i> – 9.3cM – <i>Rg2</i> – 21.2cM – <i>Xgwm106-1D</i> {10128}.
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### 33. Hairy Glume

<i>Hg..</i>	<b>ma:</b>	Tel..... <i>Hg/BG605525</i> – 3.8cM – <i>Xpsp2999(Glu3)-1A</i> {10193}.		
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### 39. Height

#### 39.1. Reduced Height: GA Insensitive

<i>Rht-B1.</i>	<b>ma:</b>	Co-located with <i>Xbarc10-4B</i> {10189}.		
<i>Rht-B1</i> <sup>IC12196</sup> {10183}.	<b>tv:</b>	<i>T. turgidum</i> var. <i>polonicum</i> IC12196 {10183}.		

#### 39.3. Reduced Height: QTL

Add at end of section:

Arina (120.5cm) / Forno (103cm): 5 QTLs in 1AS, 1BL, 2AL, 5AL and 6DL ( $R^2$  values, 8-23%) of which only one, *QHt.fal.1BL* originated in Forno {10172}.

<i>Rht-B1IC12196</i> [{10144}].	<i>Rht-B1</i> <sup>IC12196</sup> {10144}.	<b>tv:</b>	<i>T. turgidum</i> var. <i>polonicum</i> IC12196 (10144).
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### 43. Lack of Ligules

Revise section as follows: The liguleless character is controlled by complementary recessive genes in hexaploid wheat {077,738,942} and by a single recessive in tetraploid wheat {047,050,939,10133}. One gene at the tetraploid level is allelic with one of those in the hexaploid {939,10133}. Evidence for orthology of *lg1* and *lg2* with *lg* of rice

{170}, *lg1* of maize {004}, *li* of barley {1155} and *al* of rye was presented in {725}. **al**: Imperial rye chromosome 2R restored the liguled condition to a liguleless CS derivative {939}.

<b>lg1</b> {047}.	2B {942}.	<b>i</b> :	ANK33 = Novosibirskaya 67*10 / K59990 {}.
	<b>v</b> :	Eligulate W1342 <i>lg2 lg3</i> {942,10133}; K31289 {10133} K59990 {}; K53660 {10133}; Liguleless partial backcross derivative of CS{939}.	
	<b>tv</b> :	K17769 {10133}; K17784 {10133}.	
<b>lg2</b> .	2D{942}.	<b>i</b> :	ANK33 = Novosibirskaya 67*10 / K59990 {}.
	<b>v</b> :	Eligulate W1342 <i>lg1 lg3</i> {942, 10133}; Liguleless partial backcross derivative of CS{939}.	
	<b>tv</b> :	K17769 {10133}; K17784 {10133}.	
<b>lg3</b> {10133}.	2A {10133}.	<b>i</b> :	ANK33 = Novosibirskaya 67*10 / K59990 {}.
	<b>v</b> :	Present in all hexaploid cultivars.	

Genotypes of selected tetraploid wheat {10133}:

*Lg1Lg1 Lg3Lg3*: *T. turgidum* var. *durum* Ldn – dic DS 2A: *T. turgidum* var. *dicoccum* Khapli; Vernal; *T. turgidum* var. *dicoccoides* Israel A; MG4343.

*Lg1Lg1 lg3lg3*: *T. turgidum* var. *durum*: Altaiskaya Niva; Castelpoziano; Langdon; Ldn – GB DS 2B; Golden Ball; Modoc; PI 349056.

*lg1lg1 Lg3Lg3*: None identified.

### Phenol Colour Reaction of Kernels

Wheat genotypes vary in response when caryopses are treated with weak solutions of phenol, a dark colour response being indicative of a positive response. This response is believed to be related to the action of tyrosinase. There seems to a genetic relationship with polyphenol oxidase activity which causes a darkening of flour, pasta and noodle products (see also 56. Polyphenol Oxidase (PPO) activity).

<b>Tc1</b> {10130}.	2AL {10131,10130}.	<b>su</b> :	Various substitutions of chromosomes 2A into CS {10131}.
		<b>sutv</b> :	Langdon* / <i>dicoccoides</i> 2A {10130}.
		<b>tv</b> :	Golden Ball {10130}.
<b>Tc2</b> {10130}.	2BL {10130}.	<b>sutv</b> :	Langdon* / Golden Ball 2B {10130}.
		<b>tv</b> :	Golden Ball {10130}
<b>Tc3</b> [{10131}].	<i>Tc</i> (10131). 2DL {10131}.	<b>su</b> :	CS / *Timstein 2D {10131}.
		<b>v</b> :	Chinese Spring (intermediate response) {10130}. Timstein <i>Tc1</i> {10131}.
		<b>sutv</b> :	Langdon* / CS 2D(2A); Langdon* / CS 2B(2D) {10130}. <i>T. dicoccoides</i> Israel A {10130}. Lines with a negative phenol colour reaction.
		<b>v</b> :	Timstein {10131}.
		<b>tv</b> :	Cocorit 71 {10130}; Langdon {10130}.

## 55. Pollen Killer

Add to section:

Kato & Maeda {10164} reported both partial pollen and seed sterility in crosses involving certain landraces and Chinese Spring. They attributed sterility to recessive alleles of three complementary genes. The genes were designated *Ki2*, *Ki3* and *Ki4* (10164), but the relationship of *Ki3* to the earlier designated *Ki* was not established. Some genotypes:

<i>Ki2 Ki3 Ki4.</i>	v:	Aka Kawa Aka {10165}; Hope {10165}; Marquis {10165}; Red Russian {10165}.
<i>ki2 Ki3 Ki4.</i>	v:	Akadaruma {10165}; Canthatch {10165}; Norin 61 {10165}; Pakistani Landrace IL159 {10164}.
<i>Ki2 ki3 Ki4.</i>	v:	Gabo {10165}; Thatcher {10165}; Timstein {10165}; Zlatiborka {10165}.
<i>Ki2 Ki3 ki4.</i>	v:	Kagoshima {10165}; Komugi Jingoro {10165}; Sakobore {10165}.
<i>ki2 ki3 Ki4.</i>	v:	Finnish Landrace WAG4339 {10165}; Hungarian Landrace WAG4458 {10165}; Novosadska Jara {10165}.
<i>ki2 Ki3 ki4.</i>	v:	Chinese Spring {10165}; Eshima Shinriki {10165}; Ethiopian Landrace IL70 {10164}; Norin 26 {10165}.
<i>Ki2 ki3 ki4.</i>	v:	Cadet {10165}; Iraqi Landrace IL171 {10165}; Rex {10165}.

## 56. Polyphenol Oxidase (PPO) Activity

Add at end of first paragraph: An orthologous series of genes affecting PPO activity in both common wheat and durum was proposed in {10149}. See also, Phenol Colour Reaction of Kernels.

### Reaction to Black-Point of Grain

Black-point is a dark discoloration of the embryo region of the kernels. Whereas black-point is often attributed to infection by a number of fungi, the presence of such fungi may be a consequence of saprophytic colonization of affected tissues rather than the cause (see {10148} for references).

QTL: Sunco / Tasman DH population: QTL located in chromosomes 2B (15% of phenotypic variation), 3D, 4A (from Sunco) and 1D, 5A and 7AS (from Tasman {10148}). The 2B gene was associated with the presence of *Sr36* {10148}.

Cascades / AUS1408 DH population: QTL from Cascades located in chromosomes 2D (5cM from *Xgwm484-2D*, 18% of phenotypic variation), 2A (13%), and 7As (12%) {10148}.

## 58. Response to Photoperiod

<i>Ppd-B1.</i>	ma:	Gene order: <i>Xwhs2002-2B/Xgwm257-2B</i> – <i>Ppd-B1</i> – <i>Xgwm7B</i> . Actual linkage values varied between crosses (10129).
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## 61. Response to Vernalization.

<b>Vrn-A1a.</b>	Under i:	Change ‘Triple Dirk’ to ‘Triple Dirk D (GenBank AY616458 & AY616459 {10198}) {1171,1172}’.
	Under v2:	Insert ‘Triple Dirk <i>Vrn-B1a</i> {1173}’.
<b>Vrn-A1b</b> {10198}.	<b>v:</b>	Marquis PI94548 (GenBank AY616461) {10198}.
	<b>tv:</b>	<i>T. turgidum</i> var. <i>durum</i> ST36 {10198}.
<b>Vrn-A1c</b> {10198}.		This allele has a promoter similar to recessive <i>vrn-A1a</i> from Triple Dirk C {10198} and a large deletion in intron 1 {10202}.
	<b>v:</b>	IL162 {10198}; IL369 {10198} has a 5.5kb deletion in <i>Vrn-A1</i> intron 1 {10202}.
	<b>tv:</b>	Aldura PI 486150 {10202}; Leeds CI 13796 {10202}; Mexicali 75 PI 433760 {10202}; Minos CI 15161 {10202}. Most durum genotypes have a 7.2kb deletion in intron 1 {10202}.
<b>Vrn-A1d</b> {10198}.	<b>tv:</b>	<i>T. turgidum</i> var. <i>dicoccoides</i> Amrim 34 {10198}; FA15 (GenBank AY616462) {10198}; Iraq 8736 {10198}; Tabigha 15 {10198}.
<b>Vrn-A1e</b> {10198}.	<b>tv:</b>	<i>T. turgidum</i> var. <i>dicoccum</i> ST27 = Vernal (GenBank AY616463) {10198}.
<b>Vrn-B1.</b>		Add as the second note following the ma: entry: ‘All common wheat genotypes carrying <i>Vrn-B1a</i> studied so far have a 6.8kb deletion in intron 1 (Triple Dirk B, Bersee, Festiguay, Mara, Milturum, Noe, Spica) {10202}.’
<b>Vrn-D1.</b>		Add as a note following the v2 entry: ‘All the common wheat genotypes carrying <i>Vrn-D1a</i> studied so far have 4.2kb deletion in intron 1 (Triple Dirk E, Chinese Spring, Norin 61, Shinchunaga, Shirasagi Komugi, Ushio Komugi) {10202}.’

## 69. Tiller Inhibition

<b>tin1.</b>	1A {10193}.	<b>v:</b>	Banks + <i>tin</i> {10193}; Oligoculm 390 {10193}; Uniculm 492 {10193}.
		<b>ma:</b>	<i>Xpsp2999(Glu3)</i> -1A – 3.9cM – <i>tin1/Xgwm136-1A</i> – 2.4cM – <i>Xwhs179-1A</i> {10193}; the 350bp allele of <i>Xgwm136-1A</i> was diagnostic of <i>tin1</i> {10193}.

## Stem solidness

<b>Qsst.msub-</b>	3BL{10206}.	<b>v:</b>	Rampart PI 593889 {10306}.
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<b>3BL</b> {10206}.		<b>ma:</b>	Linked to microsatellite markers <i>Xgwm247-3B</i> , <i>Xgwm340-3B</i> , and <i>Xgwm547-3B</i> . These markers explained 76% of the total variation for stem solidness in Rampart / Jerry {10206}.
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## 72. Change to **Yield and Yield Components**

### 72.4. Change to **Grain yield**

<b>QYld.ndsu-5B</b> [{10161}].	[ <b>QGy.ndsu-5B</b> {10161}].	<b>v:</b>	LDN (DIC5B) / LDN, contributed by LDN {10161}.
		<b>ma:</b>	Mapped to the <i>Xbcd1030-5B – Xgwm604-5B</i> interval {10161}.

### 74.1. Grain protein content

<b>QGpc.ndsu-5B.1</b> {10161}.	5B (10161).	<b>v:</b>	LDN (DIC5B) / LDN, contributed by DIC5B {10161}.
		<b>ma:</b>	Nearest marker, <i>Xgwm604-5B</i> {10161}.
<b>QGpc.ndsu-5B.2</b> {10161}.	5B {10161}.	<b>v:</b>	LDN (DIC5B) / LDN, contributed by DIC5B {10161}.
		<b>ma:</b>	Nearest marker, <i>Xabc310-5B</i> {10161}.
<b>QGpc.ndsu-5B.3</b> {10161}.	5B {10161}.	<b>v:</b>	LDN (DIC5B) / LDN, contributed by DIC5B {10161}.
		<b>ma:</b>	Nearest marker, <i>Xwg909-5B</i> {10161}.

#### 74.3.1.3

**Glu-A3.** Before the allele list add: The first 7 alleles were distinguished using 5 allele-specific primer sets (10185).

<b>Glu-A3d.</b>	<b>v:</b>	Suneca {10185}.
<b>Glu-A3e.</b>	<b>v:</b>	Halberd (10185).
<b>Glu-A3g.</b>	<b>v:</b>	Glenlea {10185}.

Further mainly Australian genotypes with alleles *a* to *f* are listed in {10185}.

<b>Glu-B1.</b>		
<b>Glu-B1al.</b>	<b>v:</b>	Benkuti 1201 {10196,10197}; Klein Universal II {10196}; Tezanos Pintos Precoz {10196}; Tobarí 66 {10196}.
Add note: Other genotypes are listed on {10195}.		
<b>Glu-B1be</b> (10186).	<b>tv:</b>	<i>T. dicoccoides</i> Israel-A {10186}.
<b>Glu-B1bf</b> {10186}.	<b>tv:</b>	<i>T. dicoccoides</i> PI481521 {10186}.
<b>Glu-B1bg</b>	<b>tv:</b>	<i>T. dicoccoides</i> PI478742 {10186}.



{10186}.		
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### 74.5.6 Waxy proteins

<i>Wx-A1f</i> [{{10187}}].	Null allele.	<b>v:</b>	Turkey-124 {10187}; Turkey 140 {10187}; Turkey 171 {10187}; Turkey 280 {10187}; Turkey 299 {10187}.
Lines with this allele produce a PCR product with a 173-bp insertion in an exon {10187}.			

### 74.5.8. Puroindolines and grain softness proteins

<i>Pina-D1.</i>			
<i>Pina-D1b.</i>		<b>v2:</b>	Delete Fortuna and Glenman from this group.
<i>Pina-D1l</i> [{{10168}}].	<i>Pina-D1c</i> {10168}.	<b>v1:</b>	Sanyuehuang, Guangtouxiaomai, Xiaoyuhua, Chengduguangtou, and Baikezaomai Chinese landraces {10208}.
		<b>v2:</b>	Fortuna (USA) <i>Pinb-D1a</i> {10168}; Glenman <i>Pinb-D1a</i> {10168}.
<i>Pina-D1l</i> has a C deletion leading to an open reading frame shift and premature stop codon; PINA null, hard kernel texture {10208}.			
<i>Pina-D1m</i> {101208}.		<b>v:</b>	Hongheshang {10208}.
C-to-T substitution : Proline-35 to serine ; hard kernel texture {10208}.			
<i>Pina-D1n</i> {10208}.		<b>v:</b>	Xianmai, Zhuantoubaike, Baimangchun, Yazuizi, Yazuixiaomai Chinese landraces {10208}.
G-to-A substitution : Tryptophan-43 to stop codon; PINA null, hard kernel texture {10208}.			
<i>Pinb-D1.</i>			
<i>Pinb-D1r</i> [{{10209}}].	<i>Pinb-D1h</i> {10209}.	<b>v:</b>	Hyb65 (NCBI AJ619022) {10209}.
G insertion : open reading frame shift and premature stop codon; hard kernel texture {10209}.			
<i>Pinb-D1s</i> {10209}.		<b>v:</b>	NI5439 (NCBI AJ619021) {10209}.
G insertion as in <i>Pinb-D1r</i> and an A-to-G substitution; hard kernel texture {10209}.			
<i>Pinb-D1t</i> {10208}.		<b>v:</b>	Guangtouxianmai {10208}; Hongmai {10208}.
G-to-C substitution: Glycine-47 to arginine; hard kernel texture {10208}.			

### Pathogenic Disease/Pest Reaction.

### 75. Reaction to Barley Yellow Dwarf Virus

Add: Cereal Yellow Dwarf Virus.

<i>Bdv2.</i>	Insert	note:	Derived	<b>v:</b>	Mackellar = LH64C {10177}.
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	from tissue culture.		
	Derived by <i>phl</i> -induced recombination.	<b>v:</b>	Yw243, Yw443, Yw642 and Yw1029 {see 10177}.
	<b>ma:</b>	Add: Two RGAP and 1 RAPD markers developed for the Yw series also effective for at least TC14 {10177}.	

<b>Bdv3</b> {10159}.	Derived from <i>Th. intermedium</i> cv. Ohahe {10158}.	7DS.7DL-7EL {10157}	
		<b>v:</b>	P961341 PI 634825 {10157}.
		<b>ad:</b>	P107 {10159}.
		<b>su:</b>	P29 (7D{7E}) {10156}.

## 76. Reaction to *Blumeria graminis*

As a second line add:

‘Resistance genes and their molecular associations are reviewed in {10141}.’.

### 76.1. Designated genes for resistance

<b>Pm3h</b> {10212}.	<b>v:</b>	Abessi {10212,10199}
	<b>ma:</b>	tel.... <i>Pm3h</i> - 3.7cM - <i>Xgwm905-1A</i> {10199}.
<b>Pm3i</b> {10212}.	<b>v:</b>	N324 {10199}
	<b>ma:</b>	tel.... <i>Pm3i</i> - 7.2cM - <i>Xgwm905-1A</i> {10199}.
<b>Pm3j</b> {10212}.	<b>v:</b>	Gus 122 {10199}
	<b>ma:</b>	tel.... <i>Pm3j</i> - 1.2cM - <i>Xgwm905-1A</i> {10199}.
Seven variants of <i>Xgwm905-1A</i> were found among standard lines with the 10 <i>Pm3</i> resistance alleles {10199}.		
<b>Pm4a.</b>	<b>v:</b>	Yangmai 10 {10176}; Yangmai 11 (10176).
	<b>ma:</b>	Change last part of last sentence to: ‘; <i>Xbcd1231-2A</i> was converted to a STS marker {0069;10176} and to a <i>Pm4a</i> -specific dominant PCR marker {10176}. <i>Xgwm356-2A</i> - 4.8cM - <i>Pm4a</i> {10176}.
<b>Pm17.</b>	<b>ma:</b>	<i>Pm17</i> - 7.8cM - <i>Xmwig68-1R</i> - 10.9cM - <i>Sec-1</i> in 1RS {10167}.
<b>Pm31</b> [{0301}]. Modify or add as required:	<i>mlG</i> {0301}.	6AL {0301}.
	<b>ma:</b>	cent..... <i>Pm31</i> - 0.6cM - <i>Xpsp3029.1</i> - 2.5cM - <i>Xpsp3071-6A</i> {0301}.
<b>Pm21.</b> Add note at end of section: Three lines, Pm97033, Pm97034 and Pm07035, with a 6DL.6VS translocation were developed from a different source of <i>H. villosa</i> {10194}. These may carry <i>Pm21</i> .		
<b>Pm33</b> {10205}.	<i>PmPS5B</i>	2BL {10205}.

	{10205}.		
	<b>v:</b>	F3 line Am9 //3* Laizhou 953 {10205}.	
	<b>v2:</b>	Am9 = <i>T. carthlicum</i> PS5 / <i>Ae. umbellulata</i> Y39 {10205}.	
	<b>tv2:</b>	<i>T. carthlicum</i> PS5 <i>PmPS5A</i> {10205}.	
<i>mlRd30</i> (10175).	Recessive.	7AL (10175).	
	<b>v:</b>	RD30 {10175}. TA2682c {10175}.	
	<b>ma:</b>	<i>Xgwm344-7A</i> – 1.8cM – <i>mlRD30</i> – 2.3cM – <i>Xksuh9-7A</i> {10175};	
TA2682c carries a second dominant gene located in chromosome 1A {10175}.			
<i>MIZec</i> {10127}.	2BL {10127}.	<b>tv:</b>	<i>T. dicoccoides</i> Mo49 {10127}.
	<b>v:</b>	Zecoi 1 = Ralle*3 / <i>T. dicoccoides</i> {10127}.	
	<b>ma:</b>	Distally located in chromosome 2BL {10127}.	

To ‘Genotype lists: add to Chinese wheats {...’,10201’}.

### 78. Reaction to *Diuraphis noxia*

<i>Dn4</i> .	<b>ma:</b>	<i>Xgwm106-1D</i> – 5.9cM – <i>Dn4</i> – 9.2cM – <i>Xgwm337-1D</i> {10128}.	
<i>Dn7</i> .	<b>v:</b>	94M370 {10188}.	
	<b>ma:</b>	<i>Xbcd1434-1R</i> – 1.4cM – <i>Dn7</i> – 7.4cM – <i>Xksud14-1R</i> {10188}.	
<i>Dn1881</i> {10145}.	7BS {10145}.	<b>tv:</b>	Line 1881 {10145}.
		<b>ma:</b>	<i>Xgwm46-7BS</i> – 10.1cM – <i>Dn1881</i> – 12.8cM – <i>Xgwm333-7BL</i> {10145}.

**QTL:** QTLs for antixenosis were associated with *Xpsr687-7D* (7DS) and *Xgwm437-7D* (7DL) in CS / CS (Synthetic 7D) {10136}. Separate antibiotic effects were demonstrated for the same chromosome {10136}.

### 79. Reaction to *Fusarium* spp.

#### 79.1.

Insert after Patterson / Fundulea

Arina (R) / Forno (S): Three QTLs, *QFhs.fal-6DL* ( $R^2 = 22\%$ ), *QFhs.fal-5BL.1* (in Forno,  $R^2 = 14\%$ ) and *QFhs.fal.4AL* ( $R^2 = 10\%$ ) and 5 minor QTLs in 2AL, 3AL, 3BL, 3DS and 5DL were detected (10172).

Frontana (R) / Remus (S): Major QTLs in chromosomes 3AL (*Xgwm270-3AL* – *Xdupw227-3A* region) and 5A (*Xgwm129-5A* – *Xbarc-5A* region) accounted for 16% and 9% Of the phenotypic variation (mainly type 1 resistance) over 3 years (10174).

Nanda2419 (S) / Wangshuibai (R): 8 QTL were identified; those with large effects were associated with *Xgwm533-3B.3* – *Xgwm533-3B.1* (W), *Xwmc539-6B* (W) and *Xs1021m-2B* – *Xgwm47-2B* {10190}.

Wangshuibai (R)/ Wheaton (S): QTLs located in chromosomes 3BS (*Xbarc147-3B*,  $R^2 = 37\%$  & *Xbarc344-3B*,  $R^2 = 7\%$ ), 7AL (*Xwms1083-7A*,  $R^2 = 10\%$ ) and 1BL (*Xwms759-1B*,  $R^2 = 12\%$ ) {10200}.

Insert at end of section:

Haplotype diversity among a large number of FHB resistant and susceptible (mainly Canadian) germplasms indicated similarities in Asian, Brazilian and other materials (10173). Brazilian cv. Maringa was more similar to Asian than to other Brazilian lines (10173).

#### 80. Reaction to *Heterodera avenae*

<i>Cre1</i> .	<b>v:</b>	Chara {10163}; Mira {10163}; Mitre {10163}.
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#### 82. Reaction to *Mayetiola destructor*

<i>H32</i> {10137}.	3DL {10137}.	<b>v:</b>	Synthetic W7984 {10137}.
		<b>ma:</b>	<i>Xgwm3-3D – H32 – XksuE14-3D</i> {10137}.

#### 84. Reaction to *Mycosphaerella graminicola*

<i>Stb4</i> .	7DS {10140}.	<b>ma:</b>	<i>Stb4 – 0.7cM – Xgwm111-7D</i> {10140}.
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Add to existing comment: Genetic analysis of Tadinia indicated single gene segregation (assumed to be *Stb4*) with a Californian culture but a different single gene segregation with South American isolates {10140}.

**QTL:** ITMI Population: Three QTL, *QStb.ipk-1DS*, *QStb.ipk-2DS* and *QStb.ipk-6DS* conferred seedling-stage resistance to 2 isolates, whereas 2 QTL *QStb.ipk-3DL* and *QStb.ipk-7BL* conferred separate adult-stage resistances to each isolate {10151}.

#### 86. Reaction to *Phaeophaeria nodorum*

##### Reaction to *Phaeosphaeria nodorum*

***SnbTM*.** Add reference {10210}. **v:** Red Chief {10210}, Hadden {10210}, Missouri Queen {10210}, Cooker 76-35 {10210}, 81IWWMN 2095 {10210}, 86ISMN 2137 {10210}. Allelism of the hexaploid wheat gene and the *T. timopheevii SnbTM* is suspected but not confirmed.

##### 86.1 Add to QTL:

A QTL, *QSnI.ihar-6A-6AL*, identified in DH lines of Alba (R) / Begra (S) accounted for 36% of the phenotypic variance in disease severity and 14% of the variance in incubation period (10143).

### 87. Reaction to *P. graminis*

<b>Sr2.</b>	<b>ma:</b>	STMs for the <i>Xgwm533-3B</i> locus had increased specificity as markers for <i>Sr2</i> {10142}.
<b>Sr27.</b>	Enter the reference number '10162' at 3 {} positions under 3A and one {} position under 3B.	

### 88. Reaction to *P. striiformis*

<b>Yr1.</b>	<b>v2:</b>	Savannah <i>Yr2 Yr5 Yr9 Yr32</i> {10032}.		
<b>Yr3.</b>	<b>v2:</b>	Savannah <i>Yr1 Yr2 Yr9 Yr32</i> {10016}. Senat <i>Yr32</i> {10016}.		
<b>Yr9.</b>	<b>v2:</b>	Savannah <i>Yr1 Yr2 Yr3 Yr17</i> {10016}. Kauz and derivatives, Bakhtawar 94, WH542, Memof, Basribey 95, Seyhan 95 <i>Yr18 Yr27</i> {10160}.		
<b>Yr17.</b>	<b>v2:</b>	Savannah <i>Yr1 Yr2 Yr3 Yr32</i> {10016}.		
<b>Yr18.</b>	<b>v2:</b>	Kauz and derivatives, Bakhtawar 94, WH542, Memof, Basribey 95, Seyhan 95 <i>Yr9 Yr27</i> {10160}.		
<b>Yr27</b> Change {953} to {928}.	<b>v1:</b>	Add: Attila {928}; McMurachy {928}; Inquilab 91 {928}; Kauz {928}; Opata 85 {928}; PWB343 {928}.		
	<b>v2:</b>	Kauz and derivatives, Bakhtawar 94, WH542, Memof, Basribey 95, Seyhan 95 <i>Yr9 Yr18</i> {10160}.		
	<b>ma:</b>	When analysed as a QTL, variation associated with the <i>Sr27</i> locus was associated with RFLP markers <i>Xcdo152-2B</i> and <i>Xcdo405-2B</i> {928}. Delete the comment starting with 'Note'.		
<b>Yr32.</b>	<i>YrCV</i> {1430}. Correct chromosome location to 2AL {10016}.			
	<b>i:</b>	Tres / 6* Avocet S (10016).		
	<b>v:</b>	Anouska {1430}; Tres (10016).		
	<b>v2:</b>	Savannah <i>Yr1 Yr2 Yr3 Yr4 Yr17</i> {10016}. Senat <i>Yr3</i> {10016}.		
	<b>ma:</b>	<i>Xwmc198-2A</i> – 2cM – <i>Yr32</i> {10016}. <i>Yr32</i> was co-incident with one AFLP marker {10016}.		
<b>Yr35</b> {10203}.	<b>YrS8</b> {10204}.	6BS {10203}.		
	<b>v:</b>	98M71 = AUS 91388 = <i>T. dicoccoides</i> 479 / 7*CS {10204}.		
	<b>tv:</b>	<i>T. dicoccoides</i> 479 {10204}.		
<b>Yr36</b> {10138}.	Adult plant resistance.	6BS {10138}.		
	<b>i:</b>	Yecora Rojo NIL PI 638740 {10138}.	<b>v:</b>	Glupro {10138}.
	<b>itv:</b>	UC1113 NIL PI 638741 {10138}. <b>tv:</b> RSL#65 {623,10138}; <i>T. dicoccoides</i> FA-15 {10138}.		
	<b>ma:</b>	<i>Yr36</i> is between <i>Xucw74-6B</i> and <i>Xucw77-6B</i> and 3-7cM proximal to <i>Nor-B2</i> {10138}. <i>Yr36</i> is closely linked to the high grain protein locus of <i>T. turgidum</i> var. <i>dicoccoides</i> FA-15 {10138}.		
<b>Yr37</b> {10139}.	Derived from <i>Aeg. kotschyi</i> .		2DL {10139}.	

	<b>v:</b>	Line S14 {10139}.
	<b>ad:</b>	Line 8078 {10139}.
	<b>al:</b>	<i>T. kotschyi</i> 617 {10139}.

### 88.3. QTLs

Otane (R) / Tiritea (S) DH population: QTL in 7DS (probably *Yr18*), 5DL (from Otane) and 7BL (Tiritea) {10150}. Interval mapping of 7DS indicated that that the presumed *Yr18* was 7cM from *Xgwm44-7D* {10150}.

Kariega / Avocet S DH population. Two QTLs *QYr.sgi-7D* (probably *Yr18*) and *QYr.sgi.2B.1* accounted for 29 and 30%, respectively, of the phenotypic variation for stripe rust response. The nearest marker to the latter was *Xgwm148-2B* {10184}.

### 89. Reaction to *P. triticina*

<b>Lr1.</b>	<b>dv:</b>	Several <i>Ae. tauschii</i> accessions {10191}.
	<b>ma:</b>	Terminally located {10189}. In <i>Ae. tauschii</i> recombination in the region was 5-10X that in common wheat, gene order <i>Xpsr567-5D – Lr1 – Xabc718-5D</i> {10191}.
<b>Lr2a.</b>	<b>v2:</b>	Ck 9835 <i>Lr9</i> {10146}. Ck 9663 <i>Lr9 Lr10</i> {10146}.
<b>Lr9.</b>	<b>v2:</b>	Ck 9835 <i>Lr2a</i> {10146}. Ck 9663 <i>Lr2a Lr10</i> {10146}. Lockett <i>Lr24</i> {10146}.
<b>Lr10.</b>	<b>v2:</b>	Ck 9663 <i>Lr2a Lr9</i> {10146}.
<b>Lr11.</b>	<b>v:</b>	Pioneer 2850 {0523}, Pocahontas {10146}, Saluda {10146}.
<b>Lr13.</b>	<b>v2:</b>	AC Barrie <i>Lr16</i> {10178}.
<b>Lr16.</b>	After the existing reference for 2BS add: ‘,10170’.	
	<b>v:</b>	AC Domain {10170}; AC Foremost {10170}; McKenzie {10170}.
	<b>v2:</b>	AC Barrie <i>Lr13</i> {10178}.
	<b>ma:</b>	Distally located: <i>Lr16 – Xwmc764-2B</i> , 1, 9 and 3cm, respectively, in crosses RL4452 / AC Domain, BW278 / AC Foremost and HY644 / McKenzie (10170,10189).
<b>Lr17a.</b>	<b>v:</b>	Jagger {10146}.
<b>Lr24.</b>	<b>v:</b>	Lockett <i>Lr9</i> {10146}.
	<b>ma:</b>	Linked with SCAR marker SCS73 <sub>719</sub> earlier thought to tag <i>Lr19</i> {10147}.
<b>Lr50.</b>	<b>v:</b>	Correct existing entry of WGR36 to ‘KS96WGRC36 = TAM*3 / TA870 {0221}’. Add to existing entries: U2657 = Karl 92*4 / TA674 {0221}; U3067 = TAM107*4 / TA874 {0221}; U3193 = TAM107*4 / TA874 {0221}.
	<b>tv:</b>	<i>T. ameniacum</i> TA145 {0221}; TA874 {0221}; TA870 {0221}; TA895 {0221}.
	<b>ma:</b>	Linked with <i>Xgwm382-2B</i> (6.7cM) and <i>Xgdm87-2B</i> (9.4cM) {0221}.
<b>Lr53</b> {10203}.	<b>LrS8</b>	6BS {10203}.

	{10204}.		
	<b>v:</b>	98M71 = AUS 91388 = <i>T. dicoccoides</i> 479 / 7*CS {10204}.	
	<b>tv:</b>	<i>T. dicoccoides</i> 479 {10204}.	
<b>Lr54</b> {10139}.		Derived from <i>Aeg. kotschyi</i> .	2DL {10139}.
	<b>v:</b>	Line S14 {10139}.	
	<b>ad:</b>	Line 8078 {10139}.	
	<b>al:</b>	<i>T. kotschyi</i> 617 {10139}.	
<b>Lr55</b> {10180}.		Derived from <i>Elymus trachycaulis</i> {10180}.	1B (1BL.1H <sup>t</sup> S {10180}.
	<b>ad:</b>	CS + 1H <sup>t</sup> {10180}.	
	<b>v:</b>	KS04WGRC45 = Heyne*3 / TA5586.	

Complex genotypes:

AC Splendor: *Lr1 Lr16 Lr34* {10179}.

AC Teal: *Lr1 Lr13 Lr16* {821}.

Alsen: *Lr2a Lr19 Lr13 Lr23 Lr34* {10152}.

Norm: *Lr1 Lr10 Lr13 Lr16 Lr23 Lr34* {10152}.

At end of section add to: Genotype lists: U.S.A. cultivars. ‘{...,10146,10152}.’

### 89.3. QTL for reaction to *P. triticina*

QTLs	Two QTLs for slow leaf rusting, located on chromosome arms 2B and 7BK, were mapped for final severity, area under disease progress, and infection rate in the CI 13227 (resistant) x Suwon (susceptible) SSD population {10211}. The <b><i>QLr.osu-2B</i></b> was associated to microsatellite markers <i>Xbarc18-2B</i> and <i>Xbarc167-2B</i> ( $R^2 = 9-18\%$ ). The <b><i>QLr.osu-7BL</i></b> was associated to microsatellite marker <i>Xbarc182-7B</i> ( $R^2 = 12-15\%$ ) {10211}. CI 13227 contributed the resistant alleles for both QTLs.
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### 90. Reaction to *Pyrenophora tritici-repentis* (anomorph: *Drechlera tritici-repentis*)

Delete the second sentence of the introduction and replace with ‘Virulence in the pathogen is mediated by host-specific toxins and host resistance is characterized by insensitivity to those toxins. Three toxins, Ptr ToxA, Ptr ToxB and Ptr ToxC have been identified (see {10153}).’

#### 90.1 Insensitivity to tan spot toxin

<b><i>tsn1</i></b> Add reference {10207}.	<b>v:</b>	AC Barrie {10153}; AC Cadillac {10153}; AC Elsa {10153}; Hadden {10155}; Laura {10153}; Line 6B-365 {10155}; Red Chief {10155}.
	<b>ma:</b>	Completely linked to markers <i>Xfcg1-5B</i> , <i>Xfcg10-5B</i> , <i>Xfcg16-5B</i> , and <i>Xfcg17-5B</i> {10207}.

## 90.2

In the 2004 Supplement change *tsc1* to *tsc2*.

**QTL:** Replace 2004 entry with: 'ITMI population: In addition to *tsc2* which accounted for 69% of the phenotypic variation in response to race 5, a QTL in chromosome 4AL (*Xksu916(Oxo)*-4AS, W-7948) accounted for 20% of the phenotypic variation {10015}.

Add at the end of the section 'Introgressions of genes for insensitivity to Ptr ToxA and Ptr ToxB are outlined in {10153}.

## 92. Reaction to *Schizaphis graminum*

<b>Gb2.</b>	<b>ma:</b>	2.7cm proximal to <i>Sec1</i> in 1RS, but co-segregated with <i>Sec-IP</i> {10167}.	
<b>Gb3.</b>	<b>ma:</b>	<i>Xgwm037-7D</i> – 0.4cM – <i>Gb3/Xwmc634-7D</i> – 0.8cM {10169}.	
<b>Gb7</b> {10169}.	7DL {10169}.	<b>v:</b>	Synthetic W7984 {10169}.
	<b>tv:</b>	<i>Ae tauschii</i> TA1651 {10169}.	
	<b>ma:</b>	<i>Xwg420-7D</i> – 2.1cM – <i>Gb7</i> – 13.4cM – <i>Xwmc671-7D</i> {10169}.	
<b>Gby</b> {10192}.	7A {10192}.	<b>v:</b>	Sando's Selection 4040 {10192}.
	<b>ma:</b>	<i>Xpsr119-7A/Xbcd98-7A</i> - 5.8cM - <i>Gby</i> - 3.8cM - <i>XPr1B-7A</i> {10192}.	
<b>Gbz</b> {10171}.	7DL (10171).	<b>v:</b>	KSU97-85-3 {10171}.
	<b>tv:</b>	<i>Ae. tauschii</i> TA1675 {10171}.	
	<b>ma:</b>	<i>Xgdm46-7DI</i> – 9.5cM - <i>Xwmc157-7D/Gb3/Gbz</i> – 5.1cM – <i>Xbarc53-7D</i> {10171}.	

**QTL:** Antibiosis was associated with several markers, including *Rc3* (7DS) in chromosome 7D {10167}.

## Reaction to Soil-Borne Cereal Mosaic

<b>Sbm1</b> [{10132}].	<b>SbmCz1</b> {10132}.	<b>v:</b>	Cadenza {10132}.
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*Sbm1* was identified in a DH population of Avalon (susceptible) / Cadenza {10132}.

### 93. Reaction to *Tapesia yallundae*

Add at end of section: Resistance was reported in line SS767 = PI 611939, a 4J(4D) substitution line {10134}. The alien chromosome was derived from *Th. ponticum*.

### 94 Reaction to *Tilletia caries*

<b>Bt8.</b>	<b>v:</b>	HY476 {10181}.
<b>Bt10.</b>	<b>v:</b>	AC2000 {10181}; AC Cadillac {10181}; AC Carma {10181}; AC Crystal {10181}; AS Foremost {10181}; AC Taber {10181}; AC Vista {10181}.

### 97. Reaction to Wheat Spindle Streak Mosaic Bymovirus (WSSMV)

<b>Wss1</b> {10154}.	Derived from <i>Haynaldia villosa</i> .	4D (4DL.4VS) {10154}.	<b>tr:</b>	NAU413 {10154}.
	<b>su:</b>	Yangmai#5 4V(4D) {10154}.		

### 100 Reaction to Colonization by *Eriophes tulipae*

<b>Cmc1.</b>	<b>i:</b>	Norsar*5 / Cmc1 {10166}.
<b>Cmc2.</b>	<b>i:</b>	Norstar*5 / Cmc2 {10166}.
<b>Cmc3.</b>	<b>i:</b>	Norstar*5 / Cmc3 {10166}. Need to confirm relationship of 1RS segment in Amigo and Salmon as this NIL was derived from KS80H4200 a Chinese Spring Salmon line.

### Genetic Linkages

<u>Chromosome 1AS</u>			
<i>Xgli-A5</i>	-	<i>Pm3g</i>	5.2cM {0070}
<u>Chromosome 2AL</u>			
Cent	-	<i>Tc2</i>	46.8cM +- 0.9cM {10133}
<i>Yr32</i>	-	<i>Yr1</i>	I & 35 cM {10016}
<i>Tc2</i>	-	<i>Lg1</i>	11.9cM {10133}
<u>Chromosome 2BS</u>			
<i>Yr27</i>	-	<i>Lr13</i>	3.6cM +- 2.0cM {928}
<u>Chromosome 2BL</u>			
Cent	-	<i>Tc2</i>	40.7cM +- 0.9cM {10133}

Gene order: Cent – <i>Xgwm382-2B</i> – 8.0cM - <i>Xgwm619-2B</i> –35.7cM - <i>Tc2</i> – 9.1cM - <i>lg1</i> {10133}				
<u>Chromosome 2DL</u>				
Cent	-	<i>Tc3</i>	38.8% +- 5.8%	{10131}
<u>Chromosome 3AS</u>				
<i>Br-A1</i>	-	Cent	20.6cM	{10182}
<u>Chromosome 3DL</u>				
<i>Br-D1</i>	-	Cent	21.1cM	{10182}
<u>Chromosome 7DL</u>				
<i>Gb7</i>	-	<i>Gb3</i>	8.75cM	{10169}

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### Updates

928. McDonald et al. 2004 *Euphytica* 239-248.
953. This reference can be deleted. (after checking the linkage Table for 2BS).
0163. Full reference from 2001 Supplement needs to be entered in the database.
0256. Change to: Martin-Sanchez JA, Gomez-Colmenarejo M, Del Morel J, Sin E, Montes MJ, Gonzalez-Belinchon C Lopez-Brana I & Delibes A 2003 A new Hessian fly resistance gene (*H30*) transferred from wild grass *Aegilops triuncialis* to hexaploid wheat. *Theoretical & Applied Genetics* 106: 1248-1255.
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10018. Update to: *Theoretical & Applied Genetics* 109: 1597-1603.

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