

FAO World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD)

Genotyping Report

FMDV serotype: O
Country: Afghanistan
Year: 2017
Batch: WRLFMD/2018/00012
No. of sequences: 3
Report date: 10th May 2018
Report generated by: Nick Knowles
Report checked by: Kasia Bankowska



Copyright © 2018 The Pirbright Institute, Ash Road, Pirbright, Woking GU24 0NF, United Kingdom.

www: <http://www.wrlfmd.org/>

email: reporting@pirbright.ac.uk

The contents of this report should not be reproduced without permission.

Virus sample name:	AFG/44/2017
Sender reference:	10096
Location of origin:	Hazrati Sultan, Samangan
Country of origin:	Afghanistan
Date of collection:	23/06/2017
Host species:	bovine
Serotype:	O
Topotype:	ME-SA
Lineage:	PanAsia-2
Sublineage:	ANT-10
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	18/04/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	01/05/2018
Created:	03/05/2018
Last updated:	03/05/2018
VIBASys IDs: sample 36577, genome 36578, sequence viba_36579, sequencing info 36580	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_33639	IRN/8/2017	cattle	98.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_33623	IRN/36/2016	sheep	98.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_33635	IRN/5/2017	cattle	98.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_34937	PAK/7/2016	cattle	98.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_33631	IRN/3/2017	sheep	98.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_33615	IRN/31/2016	cattle	98.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_33619	IRN/35/2016	cattle	98.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_33627	IRN/37/2016	cattle	98.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_36587	AFG/54/2017	bovine	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_34280	AFG/35/2017	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_719	IRN/88/2009		93.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	91.6	0	O	ME-SA	PanAsia-2	FAR-09
viba_354	PAK/16/2010	cattle	91.3	0	O	ME-SA	PanAsia-2	PUN-10
viba_491	TUR/257/2008		91.0	0	O	ME-SA	PanAsia-2	TER-08
viba_650	IRN/8/2005	ovine	90.7	0	O	ME-SA	PanAsia-2	
viba_666	IRN/18/2010	cattle	90.5	0	O	ME-SA	PanAsia-2	BAL-09
viba_505	TUR/264/2009		90.4	0	O	ME-SA	PanAsia-2	SAN-09
viba_285	UKG/35/2001	porcine	89.9	0	O	ME-SA	PanAsia	
viba_860	IRN/6/2015	cattle	89.6	0	O	ME-SA	PanAsia-2	QOM-15
viba_850	NEP/1/2015	cattle	89.4	1	O	ME-SA	PanAsia-2	KAT-15

Virus sample name:	AFG/52/2017
Sender reference:	10625
Location of origin:	Alasay, Kapisa
Country of origin:	Afghanistan
Date of collection:	06/08/2017
Host species:	bovine
Serotype:	O
Topotype:	ME-SA
Lineage:	PanAsia-2
Sublineage:	ANT-10
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	27/04/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	03/05/2018
Created:	03/05/2018
Last updated:	03/05/2018
VIBASys IDs: sample 36581, genome 36582, sequence viba_36583, sequencing info 36584	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30320	AFG/19/2016	bovine	98.7	0	O	ME-SA	PanAsia-2	ANT-10
viba_30296	AFG/11/2016	bovine	98.6	0	O	ME-SA	PanAsia-2	ANT-10
viba_21536	AFG/23/2013	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_30304	AFG/15/2016	bovine	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_26191	PAK/42/2015	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_22729	AFG/9/2014	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_26195	PAK/44/2015	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_21539	AFG/27/2013	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_34933	PAK/6/2016	water buffalo	98.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_34929	PAK/4/2016	cattle	98.4	0	O	ME-SA	PanAsia-2	ANT-10

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_719	IRN/88/2009		94.5	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	93.0	0	O	ME-SA	PanAsia-2	FAR-09
viba_491	TUR/257/2008		92.3	0	O	ME-SA	PanAsia-2	TER-08
viba_285	UKG/35/2001	porcine	91.8	0	O	ME-SA	PanAsia	
viba_650	IRN/8/2005	ovine	91.8	0	O	ME-SA	PanAsia-2	
viba_354	PAK/16/2010	cattle	91.6	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	91.6	0	O	ME-SA	PanAsia-2	BAL-09
viba_505	TUR/264/2009		91.6	0	O	ME-SA	PanAsia-2	SAN-09
viba_860	IRN/6/2015	cattle	90.4	0	O	ME-SA	PanAsia-2	QOM-15
viba_541	OMN/7/2001	bovine	89.7	0	O	ME-SA	Ind-2001	b

Virus sample name:	AFG/54/2017
Sender reference:	10578
Location of origin:	Kahmard, Bamyan
Country of origin:	Afghanistan
Date of collection:	19/08/2017
Host species:	bovine
Serotype:	O
Topotype:	ME-SA
Lineage:	PanAsia-2
Sublineage:	ANT-10
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy2
Harvest date of material:	28/04/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R
Received for sequencing:	04/05/2018
Created:	03/05/2018
Last updated:	03/05/2018
VIBASys IDs: sample 36585, genome 36586, sequence viba_36587, sequencing info 36588	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_33623	IRN/36/2016	sheep	99.1	0	O	ME-SA	PanAsia-2	ANT-10
viba_33635	IRN/5/2017	cattle	99.1	0	O	ME-SA	PanAsia-2	ANT-10
viba_34937	PAK/7/2016	cattle	99.1	0	O	ME-SA	PanAsia-2	ANT-10
viba_33631	IRN/3/2017	sheep	99.1	0	O	ME-SA	PanAsia-2	ANT-10
viba_34280	AFG/35/2017	cattle	99.1	0	O	ME-SA	PanAsia-2	ANT-10
viba_33615	IRN/31/2016	cattle	98.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_33639	IRN/8/2017	cattle	98.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_33619	IRN/35/2016	cattle	98.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_33627	IRN/37/2016	cattle	98.9	0	O	ME-SA	PanAsia-2	ANT-10
viba_33643	IRN/11/2017	cattle	98.6	0	O	ME-SA	PanAsia-2	ANT-10

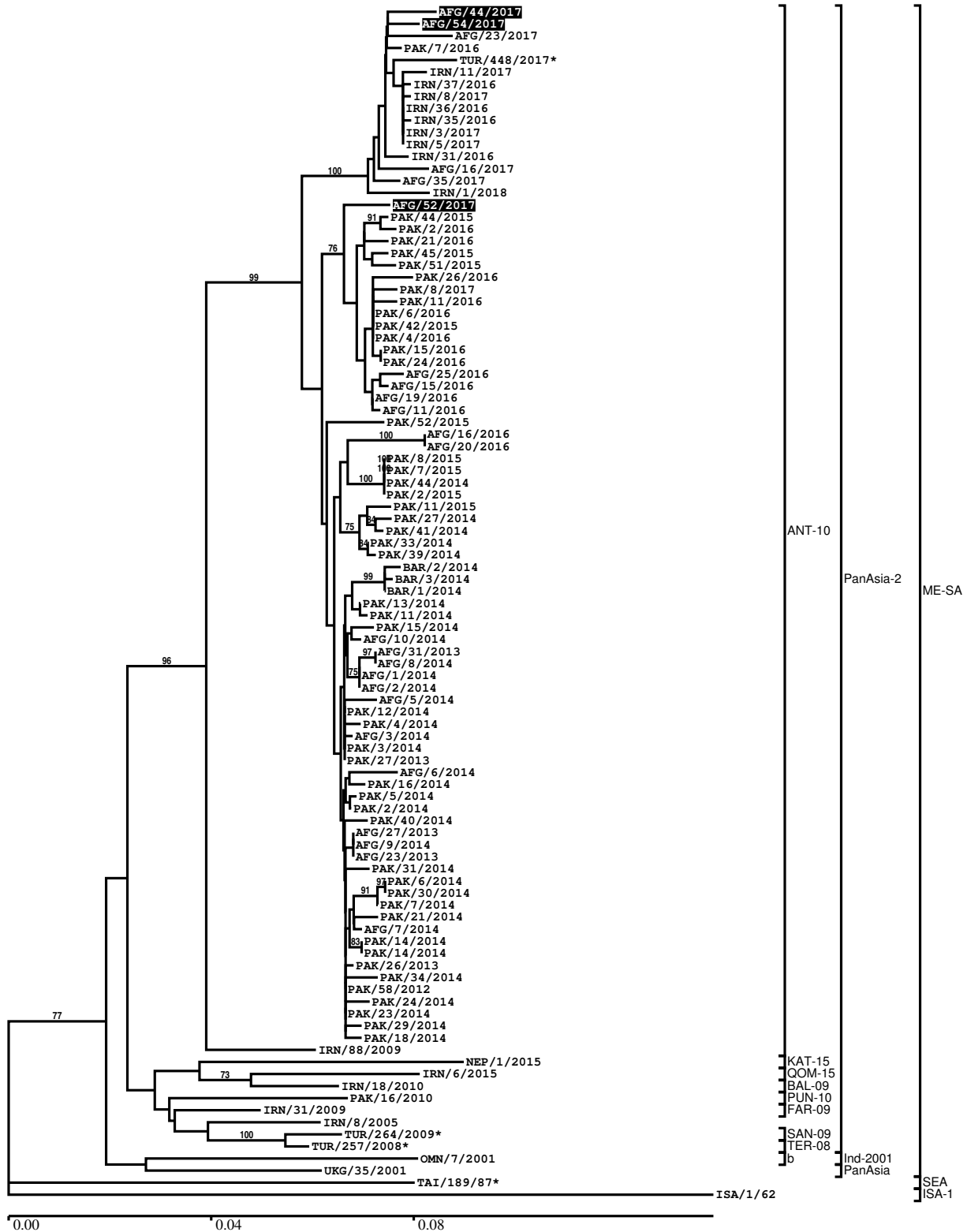
Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_719	IRN/88/2009		93.4	0	O	ME-SA	PanAsia-2	ANT-10
viba_766	IRN/31/2009	cattle	91.6	0	O	ME-SA	PanAsia-2	FAR-09
viba_491	TUR/257/2008		91.2	0	O	ME-SA	PanAsia-2	TER-08
viba_650	IRN/8/2005	ovine	91.0	0	O	ME-SA	PanAsia-2	
viba_354	PAK/16/2010	cattle	91.0	0	O	ME-SA	PanAsia-2	PUN-10
viba_666	IRN/18/2010	cattle	90.5	0	O	ME-SA	PanAsia-2	BAL-09
viba_505	TUR/264/2009		90.5	0	O	ME-SA	PanAsia-2	SAN-09
viba_285	UKG/35/2001	porcine	90.2	0	O	ME-SA	PanAsia	
viba_860	IRN/6/2015	cattle	89.6	0	O	ME-SA	PanAsia-2	QOM-15
viba_850	NEP/1/2015	cattle	89.4	1	O	ME-SA	PanAsia-2	KAT-15

Report on FMDV O in Afghanistan in 2017

Batch: WRLFMD/2018/00012



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLFMD/2018/00012-Afghanistan-O (3 sequences)
Sequence database set:	allseqs_O (3788 sequences)
Prototype sequence set:	!prototypes_O (48 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	636
Phylogeny reconstruction method:	fdnadist, fneighbor
Number of bootstrap samples:	1000
Random seed for bootstrapping:	1
Displaying bootstrap values above:	70.0%
Number of sequences in tree capped at:	100
Number of prototype sequences in tree:	11
VIBASys version:	reflabs-1.1.2

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/O

label	accession	host(s)	lab	country	taxonomic information
AFG/44/2017	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/54/2017	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/23/2017	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/7/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
TUR/448/2017*	n/a	sheep	FMDI	Turkey	ME-SA/PanAsia-2/ANT-10
IRN/11/2017	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/37/2016	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/8/2017	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/36/2016	n/a	sheep	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/35/2016	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/3/2017	n/a	sheep	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/5/2017	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
IRN/31/2016	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
AFG/16/2017	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/35/2017	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
IRN/1/2018	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
AFG/52/2017	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/44/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/2/2016	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/21/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/45/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/51/2015	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/26/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/8/2017	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/11/2016	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/6/2016	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/42/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/4/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/15/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/24/2016	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/25/2016	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/15/2016	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/19/2016	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/11/2016	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/52/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/16/2016	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10

continued on next page

label	accession	host(s)	lab	country	taxonomic information
AFG/20/2016	n/a	bovine	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/8/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/7/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/44/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/2/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/11/2015	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/27/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/41/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/33/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/39/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
BAR/2/2014	n/a	cattle	WRLFMD	Bahrain	ME-SA/PanAsia-2/ANT-10
BAR/3/2014	n/a	cattle	WRLFMD	Bahrain	ME-SA/PanAsia-2/ANT-10
BAR/1/2014	n/a	cattle	WRLFMD	Bahrain	ME-SA/PanAsia-2/ANT-10
PAK/13/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/11/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/15/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/10/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/31/2013	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/8/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/1/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/2/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/5/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/12/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/4/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/3/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/3/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/27/2013	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/6/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/16/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/5/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/2/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/40/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/27/2013	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/9/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
AFG/23/2013	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/31/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/6/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/30/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/7/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/21/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
AFG/7/2014	n/a	cattle	WRLFMD	Afghanistan	ME-SA/PanAsia-2/ANT-10
PAK/14/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/14/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/26/2013	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/34/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/58/2012	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/24/2014	n/a	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/23/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/29/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
PAK/18/2014	n/a	water buffalo	WRLFMD	Pakistan	ME-SA/PanAsia-2/ANT-10
IRN/88/2009	KY091282	n/a	WRLFMD	Iran	ME-SA/PanAsia-2/ANT-10
NEP/1/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/PanAsia-2/KAT-15
IRN/6/2015	n/a	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/QOM-15
IRN/18/2010	KY091283	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/BAL-09
PAK/16/2010	KY091285	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/PUN-10
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
IRN/8/2005	KY091281	ovine	WRLFMD	Iran	ME-SA/PanAsia-2
TUR/264/2009*	n/a	n/a	FMDI-Ankara	Turkey	ME-SA/PanAsia-2/SAN-09
TUR/257/2008*	n/a	n/a	FMDI-Ankara	Turkey	ME-SA/PanAsia-2/TER-08
OMN/7/2001	DQ164941	bovine	WRLFMD	Oman	ME-SA/Ind-2001/b
UKG/35/2001	AJ539141	porcine	PIADC	United Kingdom	ME-SA/PanAsia
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

*, not a WRLFMD Reference Number
n/a, not available