

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 30/04/2004						
WRL Ref No: BHU/47/2003	Reported by: N.J. Knowles						
Date collected: 10/12/2003	Checked by: J.-F. Valarcher						
Date received: 22/03/2004							
Species: Bovine	Topotype: ME-SA						
Material used: BTy1	Genotype/strain: PanAsia						
Region sequenced: VP1	Sequence filename: BHU03-47.SEQ						
RT-PCR primers: O-1C272F/NK61	Date sequence last updated: 30/04/2004						
No. of Nt determined: 637	Total no. of comparisons: 1394						
No. of ambiguities: 2							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/49/2003	BHU03-49	637	635	2	99.69	0.31
2	O/BHU/48/2003	BHU03-48	636	633	3	99.53	0.47
3	O/NEP/6/2003	NEP03-06	637	630	2	98.90	1.10
4	O/NEP/2/2003	NEP03-02	636	629	3	98.90	1.10
5	O/BHU/14/2003	BHU03-14	621	613	2	98.71	1.29
6	O/BHU/15/2003	BHU03-15	636	627	3	98.58	1.42
7	O/MAY/2/2004	MAY04-02	606	596	2	98.35	1.65
8	O/BHU/26/2004	BHU04-26	637	626	2	98.27	1.73
9	O/NEP/5/2003	NEP03-05	637	626	2	98.27	1.73
10	O/BHU/27/2004	BHU04-27	637	626	2	98.27	1.73
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	637	606	2	95.13	4.87
2	O/IND/53/79	IND79A53	637	569	2	89.32	10.68
3	O/IND/R2/75*	IND75--A	637	565	2	88.70	11.30
4	O1/Manisa/TUR/69	TUR69--E	637	563	2	88.38	11.62
5	O/ISR/1/88	ISR88-01	193	169	5	87.56	12.44
6	O/MOR/1/91	MOR91-01	207	180	3	86.96	13.04
7	O/TAI/189/87*	TAI87-AC	637	551	2	86.50	13.50
8	O/PHI/5/95	PHI95-05	514	415	8	80.74	19.26
9	O/HKN/6/83	HKN83-06	635	508	4	80.00	20.00
10	O1/BFS 1860/UK/67	UKG67--A	637	504	2	79.12	20.88
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 30/04/2004
WRL Ref No: BHU/48/2003	Reported by: N.J. Knowles
Date collected: 31/12/2003	Checked by: J.-F. Valarcher
Date received: 22/03/2004	
Species: Bovine	Topotype: ME-SA
Material used: BTy1	Genotype/strain: PanAsia
Region sequenced: VP1	Sequence filename: BHU03-48.SEQ
RT-PCR primers: O-1C272F/NK61	Date sequence last updated: 30/04/2004
No. of Nt determined: 637	Total no. of comparisons: 1394
No. of ambiguities: 2	
Gene length: 639	

Comments:

Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/49/2003	BHU03-49	637	636	2	99.84	0.16
2	O/BHU/47/2003	BHU03-47	636	633	3	99.53	0.47
3	O/NEP/6/2003	NEP03-06	637	631	2	99.06	0.94
4	O/NEP/2/2003	NEP03-02	636	630	3	99.06	0.94
5	O/BHU/14/2003	BHU03-14	621	614	2	98.87	1.13
6	O/BHU/15/2003	BHU03-15	636	628	3	98.74	1.26
7	O/MAY/2/2004	MAY04-02	606	597	2	98.51	1.49
8	O/BHU/26/2004	BHU04-26	637	627	2	98.43	1.57
9	O/NEP/5/2003	NEP03-05	637	627	2	98.43	1.57
10	O/BHU/27/2004	BHU04-27	637	627	2	98.43	1.57

Relationships to Reference Virus Strains

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	637	607	2	95.29	4.71
2	O/IND/53/79	IND79A53	637	570	2	89.48	10.52
3	O/IND/R2/75*	IND75--A	637	566	2	88.85	11.15
4	O1/Manisa/TUR/69	TUR69--E	637	564	2	88.54	11.46
5	O/ISR/1/88	ISR88-01	192	168	6	87.50	12.50
6	O/MOR/1/91	MOR91-01	206	179	4	86.89	13.11
7	O/TAI/189/87*	TAI87-AC	637	552	2	86.66	13.34
8	O/PHI/5/95	PHI95-05	514	415	8	80.74	19.26
9	O/HKN/6/83	HKN83-06	635	510	4	80.31	19.69
10	O1/BFS 1860/UK/67	UKG67--A	637	506	2	79.43	20.57

nt, nucleotides

*, not a WRLFMD reference number

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 30/04/2004						
WRL Ref No: BHU/49/2003	Reported by: N.J. Knowles						
Date collected: 31/12/2003	Checked by: J.-F. Valarcher						
Date received: 22/03/2004							
Species: Bovine	Topotype: ME-SA						
Material used: BTy1	Genotype/strain: PanAsia						
Region sequenced: VP1	Sequence filename: BHU03-49.SEQ						
RT-PCR primers: O-1C272F/NK61	Date sequence last updated: 30/04/2004						
No. of Nt determined: 639	Total no. of comparisons: 1394						
No. of ambiguities: 0							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/48/2003	BHU03-48	637	636	2	99.84	0.16
2	O/BHU/47/2003	BHU03-47	637	635	2	99.69	0.31
3	O/NEP/6/2003	NEP03-06	639	634	0	99.22	0.78
4	O/NEP/2/2003	NEP03-02	638	633	1	99.22	0.78
5	O/BHU/14/2003	BHU03-14	623	617	0	99.04	0.96
6	O/BHU/15/2003	BHU03-15	638	631	1	98.90	1.10
7	O/MAY/2/2004	MAY04-02	608	600	0	98.68	1.32
8	O/BHU/26/2004	BHU04-26	639	630	0	98.59	1.41
9	O/BHU/27/2004	BHU04-27	638	629	1	98.59	1.41
10	O/MAY/3/2004	MAY04-03	606	597	0	98.51	1.49
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	639	610	0	95.46	4.54
2	O/IND/53/79	IND79A53	639	573	0	89.67	10.33
3	O/IND/R2/75*	IND75--A	639	569	0	89.05	10.95
4	O1/Manisa/TUR/69	TUR69--E	639	567	0	88.73	11.27
5	O/ISR/1/88	ISR88-01	193	169	5	87.56	12.44
6	O/MOR/1/91	MOR91-01	207	180	3	86.96	13.04
7	O/TAI/189/87*	TAI87-AC	639	555	0	86.85	13.15
8	O/PHI/5/95	PHI95-05	516	417	6	80.81	19.19
9	O/HKN/6/83	HKN83-06	637	512	2	80.38	19.62
10	O1/BFS 1860/UK/67	UKG67--A	639	508	0	79.50	20.50
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 30/04/2004
WRL Ref No: BHU/26/2004	Reported by: N.J. Knowles
Date collected: 01/03/2004	Checked by: J.-F. Valarcher
Date received: 22/03/2004	
Species: Bovine	Topotype: ME-SA
Material used: BTy1	Genotype/strain: PanAsia
Region sequenced: VP1	Sequence filename: BHU04-26.SEQ
RT-PCR primers: O-1C272F/NK61	Date sequence last updated: 22/04/2004
No. of Nt determined: 639	Total no. of comparisons: 1394
No. of ambiguities: 0	
Gene length: 639	

Comments:

Ten Most Closely Related Viruses

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/27/2004	BHU04-27	638	638	1	100.00	0.00
2	O/BHU/28/2004	BHU04-28	638	634	1	99.37	0.63
3	O/NEP/2/2003	NEP03-02	638	632	1	99.06	0.94
4	O/NEP/6/2003	NEP03-06	639	631	0	98.75	1.25
5	O/BHU/49/2003	BHU03-49	639	630	0	98.59	1.41
6	O/BHU/14/2003	BHU03-14	623	614	0	98.56	1.44
7	O/BHU/15/2003	BHU03-15	638	628	1	98.43	1.57
8	O/BHU/48/2003	BHU03-48	637	627	2	98.43	1.57
9	O/MAY/2/2004	MAY04-02	608	598	0	98.36	1.64
10	O/NEP/4/2003	NEP03-04	639	628	0	98.28	1.72

Relationships to Reference Virus Strains

Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	639	607	0	94.99	5.01
2	O/IND/53/79	IND79A53	639	570	0	89.20	10.80
3	O/IND/R2/75*	IND75--A	639	568	0	88.89	11.11
4	O1/Manisa/TUR/69	TUR69--E	639	562	0	87.95	12.05
5	O/TAI/189/87*	TAI87-AC	639	554	0	86.70	13.30
6	O/ISR/1/88	ISR88-01	193	166	5	86.01	13.99
7	O/MOR/1/91	MOR91-01	207	177	3	85.51	14.49
8	O/PHI/5/95	PHI95-05	516	414	6	80.23	19.77
9	O/HKN/6/83	HKN83-06	637	511	2	80.22	19.78
10	O1/BFS 1860/UK/67	UKG67--A	639	507	0	79.34	20.66

nt, nucleotides

*, not a WRLFMD reference number

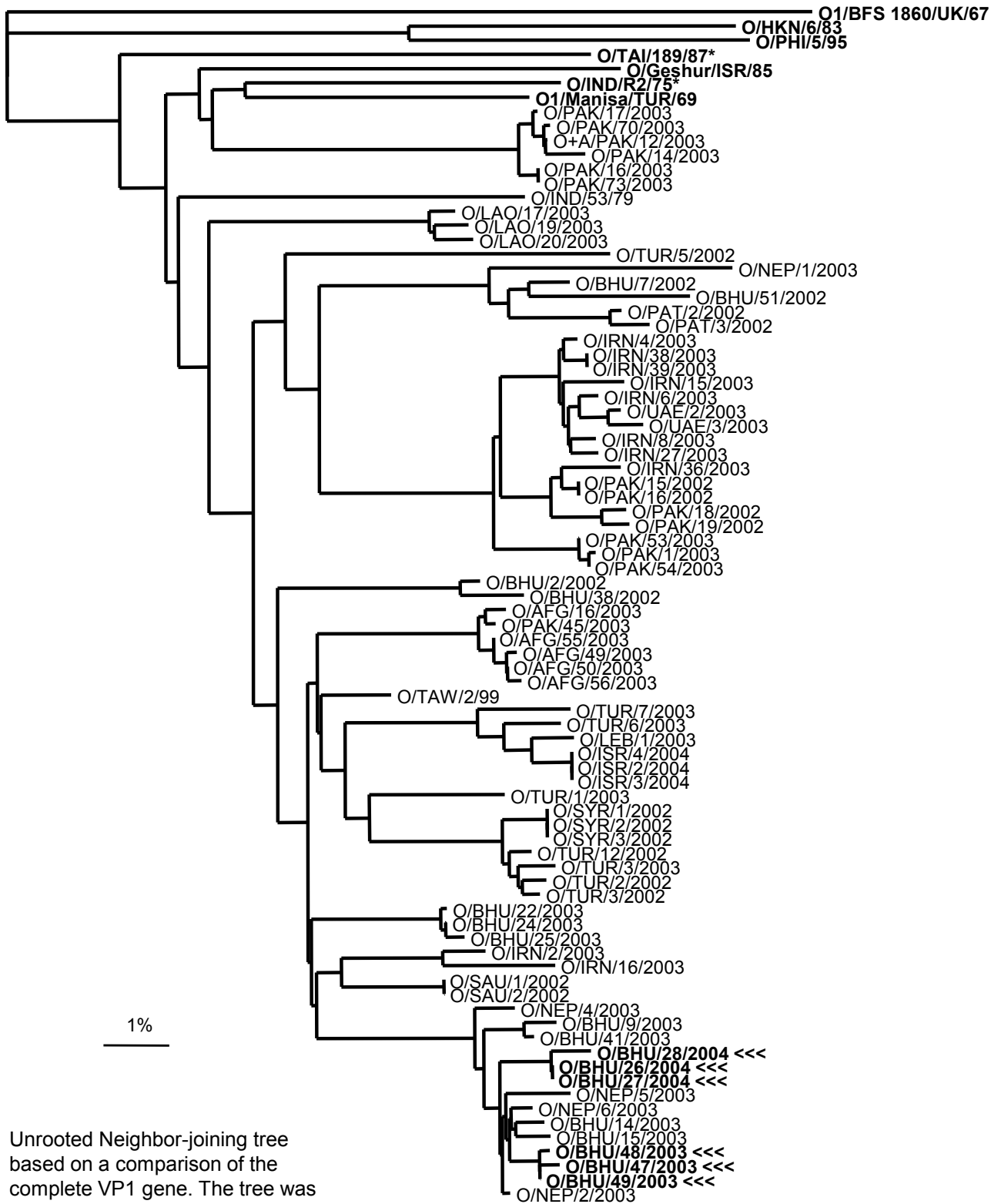
**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 30/04/2004						
WRL Ref No: BHU/27/2004	Reported by: N.J. Knowles						
Date collected: 01/03/2004	Checked by: J.-F. Valarcher						
Date received: 22/03/2004							
Species: Bovine	Topotype: ME-SA						
Material used: BTy1	Genotype/strain: PanAsia						
Region sequenced: VP1	Sequence filename: BHU04-27.SEQ						
RT-PCR primers: O-1C272F/NK61	Date sequence last updated: 30/04/2004						
No. of Nt determined: 638	Total no. of comparisons: 1394						
No. of ambiguities: 1							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/26/2004	BHU04-26	638	638	1	100.00	0.00
2	O/BHU/28/2004	BHU04-28	638	634	1	99.37	0.63
3	O/NEP/2/2003	NEP03-02	637	631	2	99.06	0.94
4	O/NEP/6/2003	NEP03-06	638	630	1	98.75	1.25
5	O/BHU/49/2003	BHU03-49	638	629	1	98.59	1.41
6	O/BHU/14/2003	BHU03-14	622	613	1	98.55	1.45
7	O/BHU/15/2003	BHU03-15	637	627	2	98.43	1.57
8	O/BHU/48/2003	BHU03-48	637	627	2	98.43	1.57
9	O/MAY/2/2004	MAY04-02	607	597	1	98.35	1.65
10	O/NEP/4/2003	NEP03-04	638	627	1	98.28	1.72
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	638	606	1	94.98	5.02
2	O/IND/53/79	IND79A53	638	569	1	89.18	10.82
3	O/IND/R2/75*	IND75--A	638	567	1	88.87	11.13
4	O1/Manisa/TUR/69	TUR69--E	638	561	1	87.93	12.07
5	O/TAI/189/87*	TAI87-AC	638	553	1	86.68	13.32
6	O/ISR/1/88	ISR88-01	193	166	5	86.01	13.99
7	O/MOR/1/91	MOR91-01	207	177	3	85.51	14.49
8	O/PHI/5/95	PHI95-05	515	413	7	80.19	19.81
9	O/HKN/6/83	HKN83-06	636	510	3	80.19	19.81
10	O1/BFS 1860/UK/67	UKG67--A	638	506	1	79.31	20.69
nt, nucleotides							
*, not a WRLFMD reference number							

**Report from the Molecular Epidemiology Section of the Dept. of Exotic Disease Control to
the Head of the World Reference Laboratory for FMD (Non-QAU Form)**

Serotype: O	Report date: 30/04/2004						
WRL Ref No: BHU/28/2004	Reported by: N.J. Knowles						
Date collected: 01/03/2004	Checked by: J.-F. Valarcher						
Date received: 22/03/2004							
Species: Bovine	Topotype: ME-SA						
Material used: 10% epith susp	Genotype/strain: PanAsia						
Region sequenced: VP1	Sequence filename: BHU04-28.SEQ						
RT-PCR primers: O-1C272F/NK61	Date sequence last updated: 30/04/2004						
No. of Nt determined: 638	Total no. of comparisons: 1394						
No. of ambiguities: 1							
Gene length: 639							
Comments:							
Ten Most Closely Related Viruses							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/BHU/26/2004	BHU04-26	638	634	1	99.37	0.63
2	O/BHU/27/2004	BHU04-27	638	634	1	99.37	0.63
3	O/NEP/2/2003	NEP03-02	637	627	2	98.43	1.57
4	O/NEP/6/2003	NEP03-06	638	626	1	98.12	1.88
5	O/BHU/49/2003	BHU03-49	638	625	1	97.96	2.04
6	O/BHU/14/2003	BHU03-14	622	609	1	97.91	2.09
7	O/BHU/47/2003	BHU03-47	637	623	2	97.80	2.20
8	O/BHU/48/2003	BHU03-48	637	623	2	97.80	2.20
9	O/BHU/15/2003	BHU03-15	637	623	2	97.80	2.20
10	O/MAY/2/2004	MAY04-02	607	593	1	97.69	2.31
Relationships to Reference Virus Strains							
Pos.	Virus name	Filename	No. nt compared	No. nt matched	No. of ambiguities	% Identity	% Difference
1	O/TAW/2/99	TAW99-02	638	603	1	94.51	5.49
2	O/IND/53/79	IND79A53	638	565	1	88.56	11.44
3	O/IND/R2/75*	IND75--A	638	563	1	88.24	11.76
4	O1/Manisa/TUR/69	TUR69--E	638	558	1	87.46	12.54
5	O/TAI/189/87*	TAI87-AC	638	549	1	86.05	13.95
6	O/MOR/1/91	MOR91-01	207	177	3	85.51	14.49
7	O/ISR/1/88	ISR88-01	193	165	5	85.49	14.51
8	O/HKN/6/83	HKN83-06	636	507	3	79.72	20.28
9	O/PHI/5/95	PHI95-05	515	410	7	79.61	20.39
10	O1/BFS 1860/UK/67	UKG67--A	638	505	1	79.15	20.85
nt, nucleotides							
*, not a WRLFMD reference number							

Report on: O BHUTAN 2003-2004



Unrooted Neighbor-joining tree based on a comparison of the complete VP1 gene. The tree was outgroup-rooted using O1/BFS 1860/UK/67.

* not a WRLFMD ref. no.