

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

Genotyping Report

Report Date for this Batch: 20 October 2015

FMDV type SAT 2
Country: Namibia
Period: 2015
No. of samples: 5

BATCH: WRLFMD/2015/00020



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FAO World Reference Laboratory for FMD Genotyping Report

IAH-P-EP-MEG-FOR-005-3

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Serotype: SAT2	Report date: 20/10/2015
WRLFMD Ref No: NMB/2/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00020	Checked by: K. Bachanek-Bankowska
Sender Ref: NAM 04/15	
Location: not known, Namibia	Topotype: III
Date collected: 20/05/2015	Genotype/strain: unnamed
Date received by WRLFMD: 13/08/2015	Sequence filename: NMB15-02.SEQ
Date received for sequencing: 13/10/2015	Date sequence last updated: 19/10/2015
Species: Bovine	No. of Nt determined: 648
Material used: BTy1 11/09/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 711
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 600
	Total turn-around time: 68 days
	Sequencing time: 7 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/NMB/4/2015* (BVI)	NMB15-AB	610	609	0	99.84	0.16	III	unnamed
2	SAT2/NMB/3/2015	NMB15-03	648	646	0	99.69	0.31	III	unnamed
3	SAT2/NMB/4/2015	NMB15-04	648	643	0	99.23	0.77	III	unnamed
4	SAT2/NMB/5/2015	NMB15-05	648	643	0	99.23	0.77	III	unnamed
5	SAT2/NMB/6/2015	NMB15-06	648	643	0	99.23	0.77	III	unnamed
6	SAT2/NMB/20/2015* (BVI)	NMB15-AE	648	640	0	98.77	1.23	III	unnamed
7	SAT2/BOT/1/80 (BVI:BOT 08/78)(KF112929)	BOT78-08	648	558	0	86.11	13.89	III	unnamed
8	SAT2/BOT/3/77 (KF112928)	BOT77-03	648	555	0	85.65	14.35	III	unnamed
9	SAT2/BOT/24/2006 (buffalo)	BOT06-24	648	553	0	85.34	14.66	III	unnamed
10	SAT2/NMB/3/2015* (BVI)	NMB15-AA	626	534	0	85.30	14.70	III	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/BOT/P3/98 (buffalo 29) (AF367124)	BOT98-AC	647	549	1	84.85	15.15	III	unnamed
2	SAT2/RHO/1/48 (AY593847)	ZAM48B01	648	527	0	81.33	18.67	III	unnamed
3	SAT2/SA/106/59 (AY593848)	RSA59--A	648	503	0	77.62	22.38	I	unnamed
4	SAT2/ZIM/14/2002 (KF219689)	ZIM02-14	648	501	0	77.31	22.69	I	unnamed
5	SAT2/ETH/1/90 (1989)(AY343935)	ETH90-AA	648	500	0	77.16	22.84	IV	unnamed
6	SAT2/KEN/1/84 (K7/84) (AY344505)	KEN84-AB	648	500	0	77.16	22.84	IV	unnamed
7	SAT2/MAL/1/2003	MAL03-01	648	496	0	76.54	23.46	I	unnamed
8	SAT2/ZIM/7/83 (AF136607)	ZIM83A07	648	485	0	74.85	25.15	II	unnamed
9	SAT2/ZIM/5/81 (EF134951)	ZIM81-AA	648	484	0	74.69	25.31	II	unnamed
10	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	472	0	72.84	27.16	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2 WRLFMD Ref No: NMB/3/2015 Batch No: WRLFMD/2015/00020 Sender Ref: NAM 09/15 Location: not known, Namibia Date collected: 20/05/2015 Date received by WRLFMD: 13/08/2015 Date received for sequencing: 13/10/2015 Species: Bovine Material used: BTy1 30/09/2015 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R SAT2-P1-1223F/SAT-2B208R	Report date: 20/10/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: III Genotype/strain: unnamed Sequence filename: NMB15-03.SEQ Date sequence last updated: 19/10/2015 No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648 Total no. of comparisons: 711 Min. no. of nt for comparison: 600 Total turn-around time: 68 days Sequencing time: 7 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/NMB/2/2015	NMB15-02	648	646	0	99.69	0.31	III	unnamed
2	SAT2/NMB/4/2015* (BVI)	NMB15-AB	610	607	0	99.51	0.49	III	unnamed
3	SAT2/NMB/4/2015	NMB15-04	648	643	0	99.23	0.77	III	unnamed
4	SAT2/NMB/5/2015	NMB15-05	648	643	0	99.23	0.77	III	unnamed
5	SAT2/NMB/6/2015	NMB15-06	648	643	0	99.23	0.77	III	unnamed
6	SAT2/NMB/20/2015* (BVI)	NMB15-AE	648	640	0	98.77	1.23	III	unnamed
7	SAT2/BOT/1/80 (BVI:BOT 08/78)(KF112929)	BOT78-08	648	560	0	86.42	13.58	III	unnamed
8	SAT2/BOT/3/77 (KF112928)	BOT77-03	648	557	0	85.96	14.04	III	unnamed
9	SAT2/BOT/24/2006 (buffalo)	BOT06-24	648	554	0	85.49	14.51	III	unnamed
10	SAT2/BOT/P3/2000 SAV-24	BOT00SAD	646	552	2	85.45	14.55	III	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/BOT/P3/98 (buffalo 29) (AF367124)	BOT98-AC	647	551	1	85.16	14.84	III	unnamed
2	SAT2/RHO/1/48 (AY593847)	ZAM48B01	648	528	0	81.48	18.52	III	unnamed
3	SAT2/SA/106/59 (AY593848)	RSA59--A	648	503	0	77.62	22.38	I	unnamed
4	SAT2/ZIM/14/2002 (KF219689)	ZIM02-14	648	503	0	77.62	22.38	I	unnamed
5	SAT2/KEN/1/84 (K7/84) (AY344505)	KEN84-AB	648	502	0	77.47	22.53	IV	unnamed
6	SAT2/ETH/1/90 (1989)(AY343935)	ETH90-AA	648	500	0	77.16	22.84	IV	unnamed
7	SAT2/MAL/1/2003	MAL03-01	648	496	0	76.54	23.46	I	unnamed
8	SAT2/ZIM/7/83 (AF136607)	ZIM83A07	648	486	0	75.00	25.00	II	unnamed
9	SAT2/ZIM/5/81 (EF134951)	ZIM81-AA	648	484	0	74.69	25.31	II	unnamed
10	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	472	0	72.84	27.16	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 20/10/2015
WRLFMD Ref No: NMB/4/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00020	Checked by: K. Bachanek-Bankowska
Sender Ref: NAM 13/15	
Location: not known, Namibia	Topotype: III
Date collected: 20/05/2015	Genotype/strain: unnamed
Date received by WRLFMD: 13/08/2015	Sequence filename: NMB15-04.SEQ
Date received for sequencing: 13/10/2015	Date sequence last updated: 19/10/2015
Species: Bovine	No. of Nt determined: 648
Material used: BTy1 02/10/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 711
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 600
	Total turn-around time: 68 days
	Sequencing time: 7 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/NMB/5/2015	NMB15-05	648	644	0	99.38	0.62	III	unnamed
2	SAT2/NMB/6/2015	NMB15-06	648	644	0	99.38	0.62	III	unnamed
3	SAT2/NMB/2/2015	NMB15-02	648	643	0	99.23	0.77	III	unnamed
4	SAT2/NMB/3/2015	NMB15-03	648	643	0	99.23	0.77	III	unnamed
5	SAT2/NMB/4/2015* (BVI)	NMB15-AB	610	605	0	99.18	0.82	III	unnamed
6	SAT2/NMB/20/2015* (BVI)	NMB15-AE	648	641	0	98.92	1.08	III	unnamed
7	SAT2/BOT/1/80 (BVI:BOT 08/78)(KF112929)	BOT78-08	648	559	0	86.27	13.73	III	unnamed
8	SAT2/BOT/3/77 (KF112928)	BOT77-03	648	556	0	85.80	14.20	III	unnamed
9	SAT2/BOT/24/2006 (buffalo)	BOT06-24	648	555	0	85.65	14.35	III	unnamed
10	SAT2/BOT/P3/2000 SAV-24	BOT00SAD	646	553	2	85.60	14.40	III	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/BOT/P3/98 (buffalo 29) (AF367124)	BOT98-AC	647	552	1	85.32	14.68	III	unnamed
2	SAT2/RHO/1/48 (AY593847)	ZAM48B01	648	529	0	81.64	18.36	III	unnamed
3	SAT2/ZIM/14/2002 (KF219689)	ZIM02-14	648	506	0	78.09	21.91	I	unnamed
4	SAT2/KEN/1/84 (K7/84) (AY344505)	KEN84-AB	648	504	0	77.78	22.22	IV	unnamed
5	SAT2/SA/106/59 (AY593848)	RSA59--A	648	503	0	77.62	22.38	I	unnamed
6	SAT2/ETH/1/90 (1989)(AY343935)	ETH90-AA	648	502	0	77.47	22.53	IV	unnamed
7	SAT2/MAL/1/2003	MAL03-01	648	497	0	76.70	23.30	I	unnamed
8	SAT2/ZIM/5/81 (EF134951)	ZIM81-AA	648	487	0	75.15	24.85	II	unnamed
9	SAT2/ZIM/7/83 (AF136607)	ZIM83A07	648	487	0	75.15	24.85	II	unnamed
10	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	474	0	73.15	26.85	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2 WRLFMD Ref No: NMB/5/2015 Batch No: WRLFMD/2015/00020 Sender Ref: NAM 20/15 Location: not known, Namibia Date collected: 20/05/2015 Date received by WRLFMD: 13/08/2015 Date received for sequencing: 13/10/2015 Species: Bovine Material used: BTy1 01/10/2015 Region sequenced: VP1 RT-PCR primers: SAT2-1C445F/SAT-2B208R SAT2-P1-1223F/SAT-2B208R	Report date: 20/10/2015 Reported by: N.J. Knowles Checked by: K. Bachanek-Bankowska Topotype: III Genotype/strain: unnamed Sequence filename: NMB15-05.SEQ Date sequence last updated: 19/10/2015 No. of Nt determined: 648 No. of ambiguities: 0 Gene length: 648 Total no. of comparisons: 711 Min. no. of nt for comparison: 600 Total turn-around time: 68 days Sequencing time: 7 days
Comments:	

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Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/NMB/20/2015* (BVI)	NMB15-AE	648	645	0	99.54	0.46	III	unnamed
2	SAT2/NMB/4/2015	NMB15-04	648	644	0	99.38	0.62	III	unnamed
3	SAT2/NMB/6/2015	NMB15-06	648	644	0	99.38	0.62	III	unnamed
4	SAT2/NMB/2/2015	NMB15-02	648	643	0	99.23	0.77	III	unnamed
5	SAT2/NMB/3/2015	NMB15-03	648	643	0	99.23	0.77	III	unnamed
6	SAT2/NMB/4/2015* (BVI)	NMB15-AB	610	604	0	99.02	0.98	III	unnamed
7	SAT2/BOT/1/80 (BVI:BOT 08/78)(KF112929)	BOT78-08	648	559	0	86.27	13.73	III	unnamed
8	SAT2/BOT/3/77 (KF112928)	BOT77-03	648	556	0	85.80	14.20	III	unnamed
9	SAT2/BOT/1/2005	BOT05-01	648	554	0	85.49	14.51	III	unnamed
10	SAT2/BOT/3/2005	BOT05-03	648	554	0	85.49	14.51	III	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/BOT/P3/98 (buffalo 29) (AF367124)	BOT98-AC	647	550	1	85.01	14.99	III	unnamed
2	SAT2/RHO/1/48 (AY593847)	ZAM48B01	648	527	0	81.33	18.67	III	unnamed
3	SAT2/ZIM/14/2002 (KF219689)	ZIM02-14	648	503	0	77.62	22.38	I	unnamed
4	SAT2/SA/106/59 (AY593848)	RSA59--A	648	502	0	77.47	22.53	I	unnamed
5	SAT2/KEN/1/84 (K7/84) (AY344505)	KEN84-AB	648	500	0	77.16	22.84	IV	unnamed
6	SAT2/ETH/1/90 (1989)(AY343935)	ETH90-AA	648	498	0	76.85	23.15	IV	unnamed
7	SAT2/MAL/1/2003	MAL03-01	648	496	0	76.54	23.46	I	unnamed
8	SAT2/ZIM/7/83 (AF136607)	ZIM83A07	648	485	0	74.85	25.15	II	unnamed
9	SAT2/ZIM/5/81 (EF134951)	ZIM81-AA	648	484	0	74.69	25.31	II	unnamed
10	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	471	0	72.69	27.31	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Serotype: SAT2	Report date: 20/10/2015
WRLFMD Ref No: NMB/6/2015	Reported by: N.J. Knowles
Batch No: WRLFMD/2015/00020	Checked by: K. Bachanek-Bankowska
Sender Ref: NAM 21/15	
Location: not known, Namibia	Topotype: III
Date collected: 20/05/2015	Genotype/strain: unnamed
Date received by WRLFMD: 13/08/2015	Sequence filename: NMB15-06.SEQ
Date received for sequencing: 13/10/2015	Date sequence last updated: 19/10/2015
Species: Bovine	No. of Nt determined: 648
Material used: BTy1 01/10/2015	No. of ambiguities: 0
Region sequenced: VP1	Gene length: 648
RT-PCR primers: SAT2-1C445F/SAT-2B208R	Total no. of comparisons: 711
SAT2-P1-1223F/SAT-2B208R	Min. no. of nt for comparison: 600
	Total turn-around time: 68 days
	Sequencing time: 7 days
Comments:	

Most Closely Related Viruses									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/NMB/4/2015	NMB15-04	648	644	0	99.38	0.62	III	unnamed
2	SAT2/NMB/5/2015	NMB15-05	648	644	0	99.38	0.62	III	unnamed
3	SAT2/NMB/2/2015	NMB15-02	648	643	0	99.23	0.77	III	unnamed
4	SAT2/NMB/3/2015	NMB15-03	648	643	0	99.23	0.77	III	unnamed
5	SAT2/NMB/4/2015* (BVI)	NMB15-AB	610	604	0	99.02	0.98	III	unnamed
6	SAT2/NMB/20/2015* (BVI)	NMB15-AE	648	641	0	98.92	1.08	III	unnamed
7	SAT2/BOT/1/80 (BVI:BOT 08/78)(KF112929)	BOT78-08	648	561	0	86.57	13.43	III	unnamed
8	SAT2/BOT/3/77 (KF112928)	BOT77-03	648	558	0	86.11	13.89	III	unnamed
9	SAT2/BOT/24/2006 (buffalo)	BOT06-24	648	555	0	85.65	14.35	III	unnamed
10	SAT2/BOT/P3/2000 SAV-24	BOT00SAD	646	553	2	85.60	14.40	III	unnamed
Most Closely Related Reference Viruses									
(see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm)									
Pos.	Virus name	Filename	No. nt comp.	No. nt match.	No. of ambig.	% Id.	% Diff.	Topotype	Strain
1	SAT2/BOT/P3/98 (buffalo 29) (AF367124)	BOT98-AC	647	552	1	85.32	14.68	III	unnamed
2	SAT2/RHO/1/48 (AY593847)	ZAM48B01	648	529	0	81.64	18.36	III	unnamed
3	SAT2/SA/106/59 (AY593848)	RSA59--A	648	504	0	77.78	22.22	I	unnamed
4	SAT2/ZIM/14/2002 (KF219689)	ZIM02-14	648	503	0	77.62	22.38	I	unnamed
5	SAT2/KEN/1/84 (K7/84) (AY344505)	KEN84-AB	648	502	0	77.47	22.53	IV	unnamed
6	SAT2/ETH/1/90 (1989)(AY343935)	ETH90-AA	648	500	0	77.16	22.84	IV	unnamed
7	SAT2/MAL/1/2003	MAL03-01	648	498	0	76.85	23.15	I	unnamed
8	SAT2/ZIM/7/83 (AF136607)	ZIM83A07	648	487	0	75.15	24.85	II	unnamed
9	SAT2/ZIM/5/81 (EF134951)	ZIM81-AA	648	485	0	74.85	25.15	II	unnamed
10	SAT2/GHA/2/90 (AF479415)	GHA90A02	648	473	0	72.99	27.01	V	unnamed

nt, nucleotides

*, not a WRLFMD reference number

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Report on FMDV SAT 2 in Namibia in 2015

Batch: WRLFMD/2015/00020

◆ indicates viruses in this batch

Software: MEGA 6.06

Analysis

Analysis ----- Phylogeny Reconstruction

Scope ----- All Selected Taxa

Statistical Method ----- Neighbor-joining

Phylogeny Test

Test of Phylogeny ----- Bootstrap method

No. of Bootstrap Replications ----- 1000

Substitution Model

Substitutions Type ----- Nucleotide

Model/Method ----- Kimura 2-parameter model

Substitutions to Include ----- d: Transitions + Transversions

Rates and Patterns

Rates among Sites ----- Uniform rates

Pattern among Lineages ----- Same (Homogeneous)

Data Subset to Use

Gaps/Missing Data Treatment ----- Pairwise deletion

Codons Included ----- 1st+2nd+3rd+Non-Coding

No. of Sites : 651

No Of Bootstrap Reps = 1000

Only bootstrap values of 70% and above are shown

*, not a WRLFMD Ref. No.

N.J. Knowles, J. Wadsworth & K. Bachanek-Bankowska,
20 October 2015

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