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# 1. GROUND MOTION SELECTION CRITERIA

Table 1: Suite Selection Criteria

<b>Parameter</b>	<b>Value</b>
<b>Records per Suite</b>	7
<b>Match</b>	Mean + Dispersion
<b>Match Type</b>	SRSS
<b>Scale Factor Range</b>	0.25 – 4
<b>Actual Scale Factor Range</b>	0.61 – 3.6
<b>Period</b>	0.01 – 5.25
<b>Number of Period Points &amp; Spacing</b>	50 points Log-Spaced
<b>Error Measure of</b>	Ln(P <sub>Sa</sub> )
<b>Error Measure Calculation</b>	Sum of the Square Error (SSE)
<b>Suite Mean Calculation</b>	Arithmetic
<b>Dispersion Calculation</b>	LogSigma
<b>Suite Scaling Constraint</b>	None
<b>Record Scaling Constraint (Peaks and Valleys)</b>	$\text{mean} - 2 \cdot \sigma < P_{Sa} < \text{mean} + 2 \cdot \sigma$

## 2. SUMMARY TABLE

Table 2: Suite of [7] Selected and Scaled Ground Motions for MCE

#	CompTriplet	Title	RSN	Format	Event	Date	Mw	Station	Vs30 (m/s)	SiteNEHRP	dRup (km)	PGA (G)	PGV (cm/s)	PGD (cm)	Tpulse (s)	Rank	SF	Error
1		H-E12	175	NGA	Imperial Valley-06	Mon Oct/15/1979 11:16 PM	6.53	El Centro Array #12	196.88	D	17.94	0.47	79.96	54.72		3	3.60	0.86
1		H-E12140	175	NGA	Imperial Valley-06	Mon Oct/15/1979 11:16 PM	6.53	El Centro Array #12	196.88	D	17.94	0.14	21.48	17.33			3.60	
2		H-E12230	175	NGA	Imperial Valley-06	Mon Oct/15/1979 11:16 PM	6.53	El Centro Array #12	196.88	D	17.94	0.12	22.99	13.35			3.60	
3		H-E12-UP	175	NGA	Imperial Valley-06	Mon Oct/15/1979 11:16 PM	6.53	El Centro Array #12	196.88	D	17.94	0.07	6.87	4.98			3.60	
2		TCU122	1546	NGA	Chi-Chi, Taiwan	Mon Sep/20/1999	7.62	TCU122	475.46	C	9.34	0.47	85.25	77.47		1	1.99	0.51
1		TCU122-E	1546	NGA	Chi-Chi, Taiwan	Mon Sep/20/1999	7.62	TCU122	475.46	C	9.34	0.21	42.13	55.83			1.99	
2		TCU122-N	1546	NGA	Chi-Chi, Taiwan	Mon Sep/20/1999	7.62	TCU122	475.46	C	9.34	0.26	43.52	27.12			1.99	
3		TCU122-V	1546	NGA	Chi-Chi, Taiwan	Mon Sep/20/1999	7.62	TCU122	475.46	C	9.34	0.24	41.09	30.79			1.99	
3		WVC	803	NGA	Loma Prieta	Wed Oct/18/1989 12:05 AM	6.93	Saratoga - W Valley Coll.	347.90	D	9.31	0.43	76.02	44.10	5.65	6	1.46	1.02
1		WVC000	803	NGA	Loma Prieta	Wed Oct/18/1989 12:05 AM	6.93	Saratoga - W Valley Coll.	347.90	D	9.31	0.26	42.05	24.26	5.65		1.46	
2		WVC270	803	NGA	Loma Prieta	Wed Oct/18/1989 12:05 AM	6.93	Saratoga - W Valley Coll.	347.90	D	9.31	0.33	64.89	37.84	5.65		1.46	
3		WVCXXX	803	NGA	Loma Prieta	Wed Oct/18/1989 12:05 AM	6.93	Saratoga - W Valley Coll.	347.90	D	9.31	0.00	0.00	0.00	5.65		1.46	
4		SMTC	6969	NGA	Darfield, New Zealand	Fri Sep/03/2010 04:35 PM	7.00	Styx Mill Transfer Station	247.50	D-E	20.86	0.39	115.15	87.32	9.35	5	2.26	0.99
1		SMTCN88W	6969	NGA	Darfield, New Zealand	Fri Sep/03/2010 04:35 PM	7.00	Styx Mill Transfer Station	247.50	D-E	20.86	0.18	38.66	26.65	9.35		2.26	
2		SMTCS02W	6969	NGA	Darfield, New Zealand	Fri Sep/03/2010 04:35 PM	7.00	Styx Mill Transfer Station	247.50	D-E	20.86	0.17	60.14	47.69	9.35		2.26	

3	SMTCUP	6969	NGA	Darfield, New Zealand	Fri Sep/03/2010 04:35 PM	7.00	Styx Mill Transfer Station	247.50	D-E	20.86	0.23	12.35	9.37	9.35	2.26		
5	B-IVW	729	NGA	Superstition Hills-02	Tue Nov/24/1987 01:16 PM	6.54	Imperial Valley Wildlife Liquefaction Array	179.00	E	23.85	0.40	62.94	52.04		2	1.99	0.81
1	B-IVW090	729	NGA	Superstition Hills-02	Tue Nov/24/1987 01:16 PM	6.54	Imperial Valley Wildlife Liquefaction Array	179.00	E	23.85	0.18	31.66	22.27			1.99	
2	B-IVW360	729	NGA	Superstition Hills-02	Tue Nov/24/1987 01:16 PM	6.54	Imperial Valley Wildlife Liquefaction Array	179.00	E	23.85	0.21	36.20	28.67			1.99	
3	B-IVW-UP	729	NGA	Superstition Hills-02	Tue Nov/24/1987 01:16 PM	6.54	Imperial Valley Wildlife Liquefaction Array	179.00	E	23.85	0.40	6.15	4.17			1.99	
6	CHI	5823	NGA	El Mayor- Cucapah	Sun Apr/04/2010 10:40 PM	7.20	Chihuahua	242.05	D	19.47	0.53	86.97	92.71		4	2.41	0.91
1	CHI000	5823	NGA	El Mayor- Cucapah	Sun Apr/04/2010 10:40 PM	7.20	Chihuahua	242.05	D	19.47	0.25	38.33	48.21			2.41	
2	CHI090	5823	NGA	El Mayor- Cucapah	Sun Apr/04/2010 10:40 PM	7.20	Chihuahua	242.05	D	19.47	0.20	33.98	30.71			2.41	
3	CHI-V	5823	NGA	El Mayor- Cucapah	Sun Apr/04/2010 10:40 PM	7.20	Chihuahua	242.05	D	19.47	0.28	15.90	12.99			2.41	
7	NF25_26		SAC	Steel		7.10				11.20	0.81	100.30	34.01		7	0.61	1.13
1	NF25		SAC	Steel		7.10				11.20	1.01	155.07	72.88			0.61	
2	NF26		SAC	Steel		7.10				11.20	0.66	64.88	15.87			0.61	
3	NF25_26.v		SAC	Steel		7.10				11.20	0.65	61.35	34.07			0.61	
<b>Average</b>						<b>6.99</b>		<b>281.47</b>		<b>16</b>	<b>0.34</b>	<b>51.65</b>	<b>35.98</b>	<b>7.5</b>		<b>2.05</b>	<b>0.89</b>

### 3. SUITE SPECTRA & STATISTICS

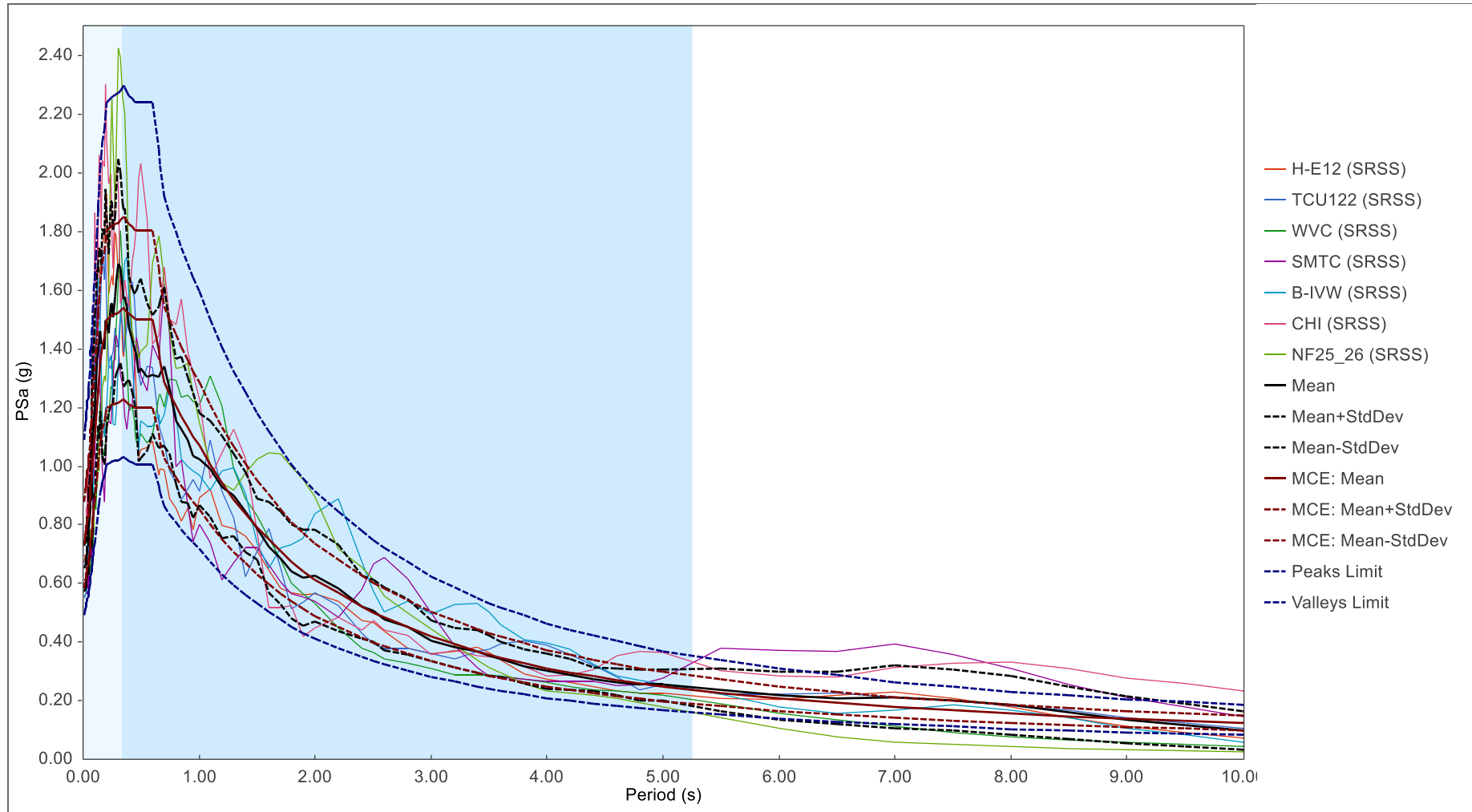


Figure 1: Comparison of Suite Mean and Dispersion to Target Spectrum (MCE) for Scaled Suite of 7 Ground Motions.

#### 4. RECORDS SPRECTRA

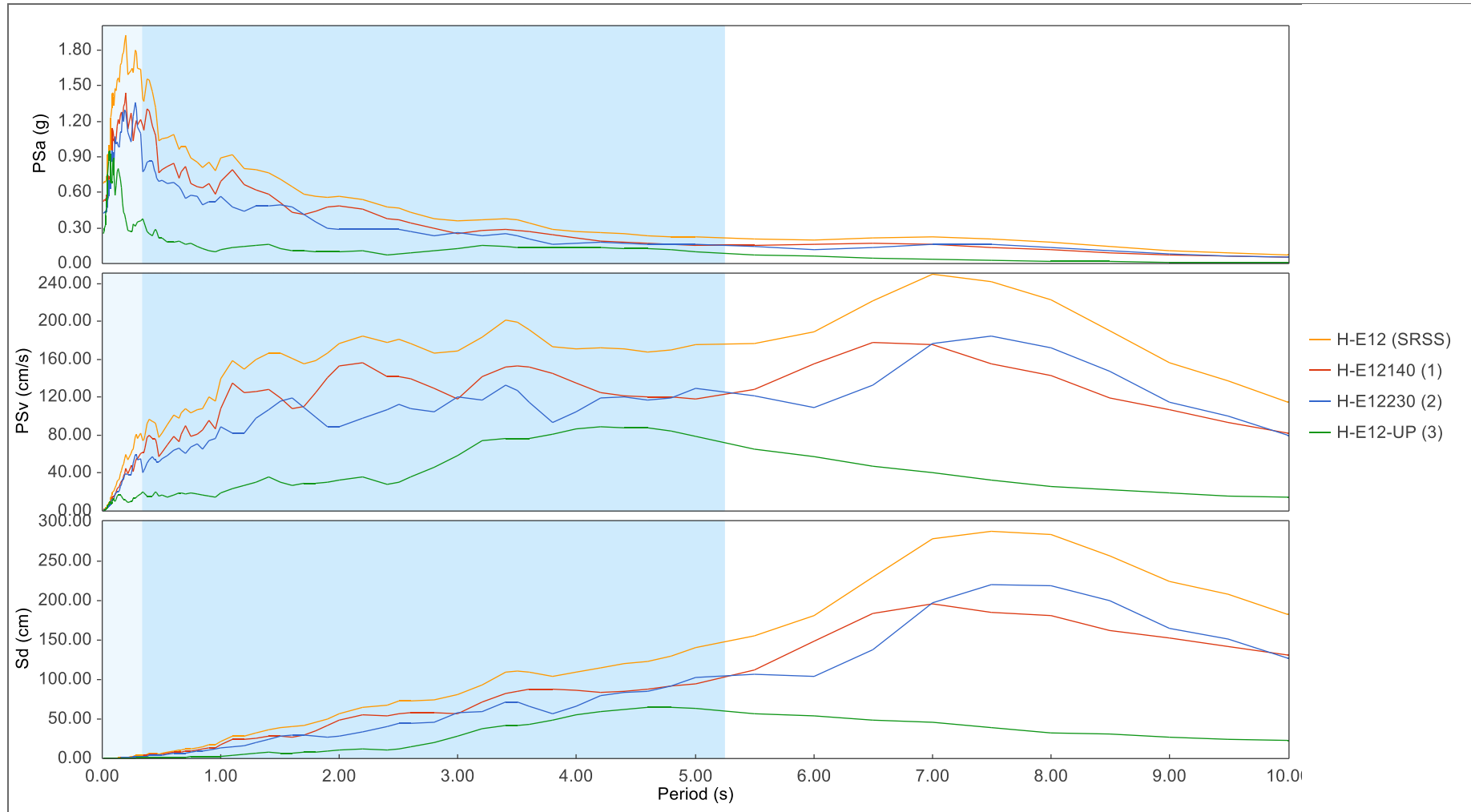


Figure 2: Pseudo-Spectra Chart for H-E12 and its components, Imperial Valley-06 (October 15, 1979) at El Centro Array #12, RSN 175 – SF=3.6 (MCE Suite – Rec #1)



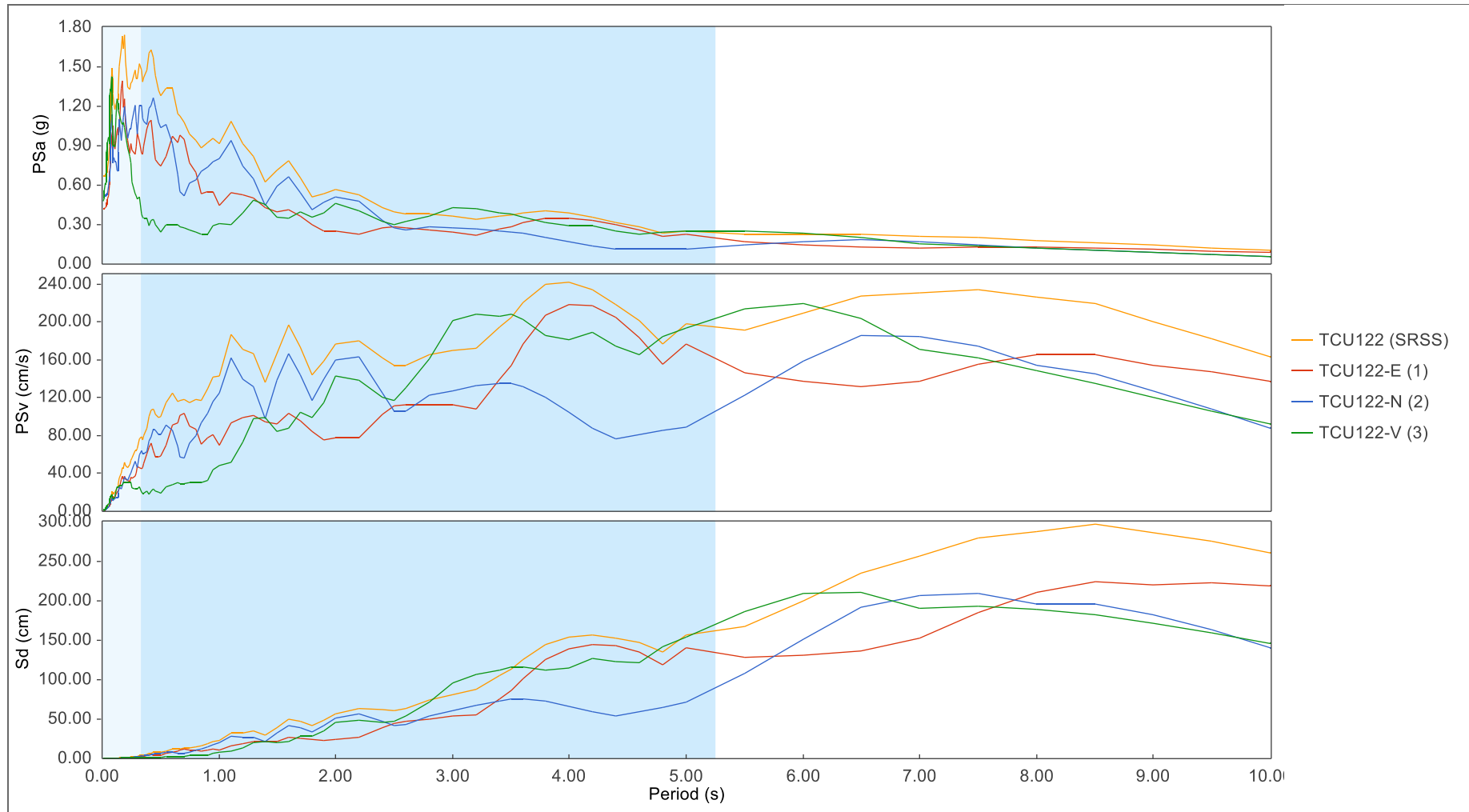


Figure 3: Pseudo-Spectra Chart for TCU122 and its components, Chi-Chi, Taiwan (September 20, 1999) at TCU122, RSN 1546 – SF=1.99 (MCE Suite – Rec #2)

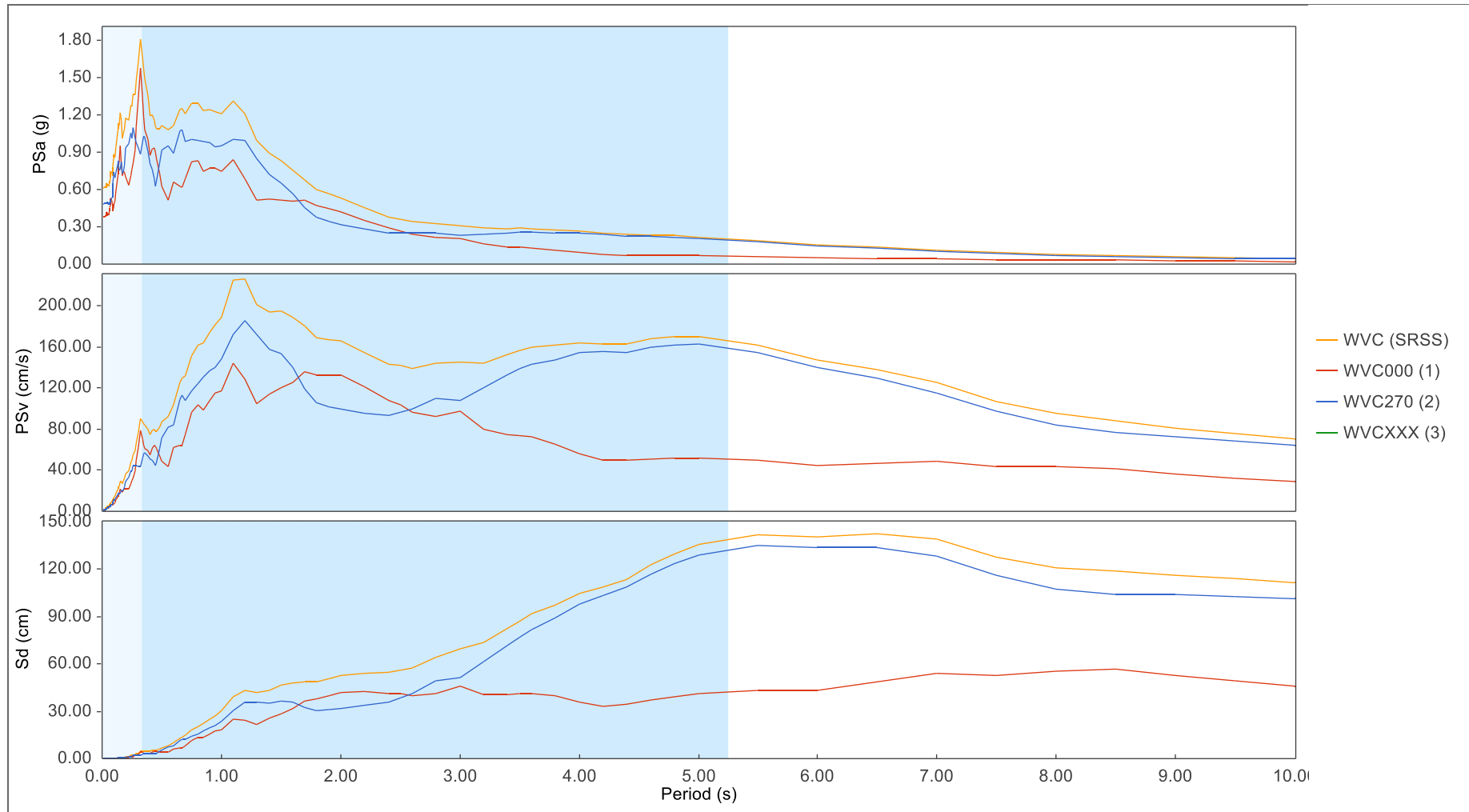


Figure 4: Pseudo-Spectra Chart for WVC and its components, Loma Prieta (October 18, 1989) at Saratoga - W Valley Coll., RSN 803 – SF=1.46 (MCE Suite – Rec #3)

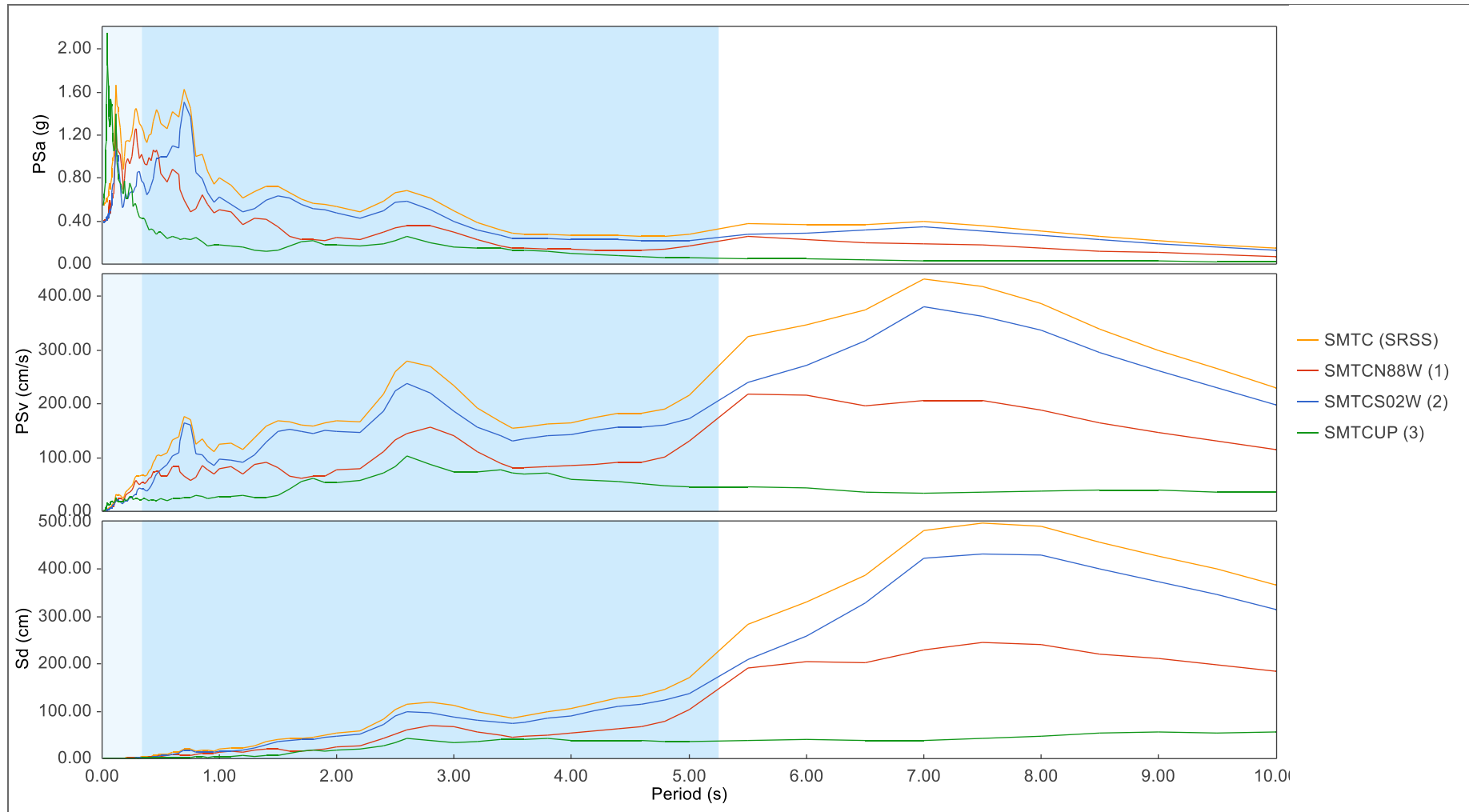


Figure 5: Pseudo-Spectra Chart for SMTC and its components, Darfield, New Zealand (September 03, 2010) at Styx Mill Transfer Station, RSN 6969 – SF=2.26 (MCE Suite – Rec #4)

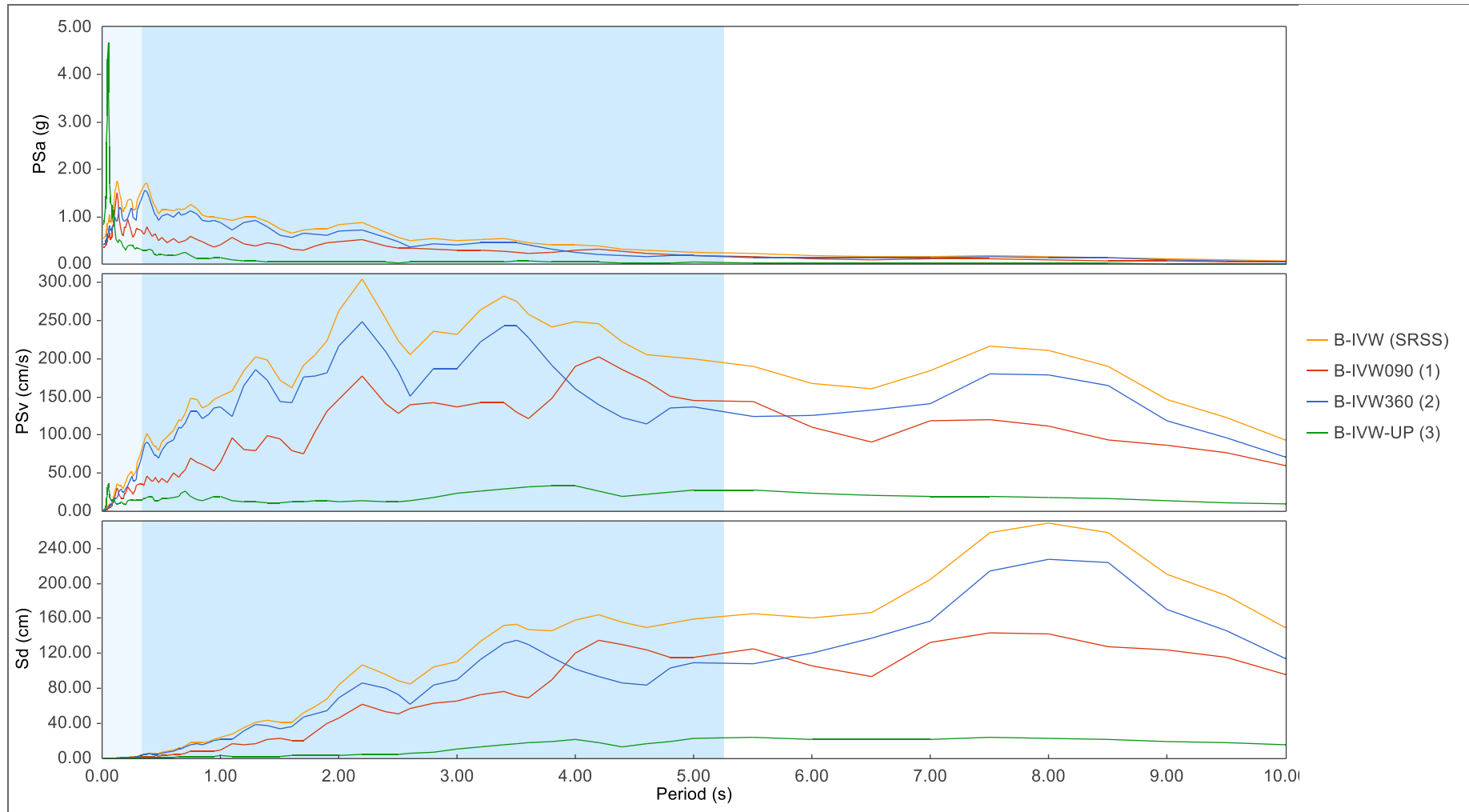


Figure 6: Pseudo-Spectra Chart for B-IVW and its components, Superstition Hills-02 (November 24, 1987) at Imperial Valley Wildlife Liquefaction Array, RSN 729 – SF=1.99 (MCE Suite – Rec #5)

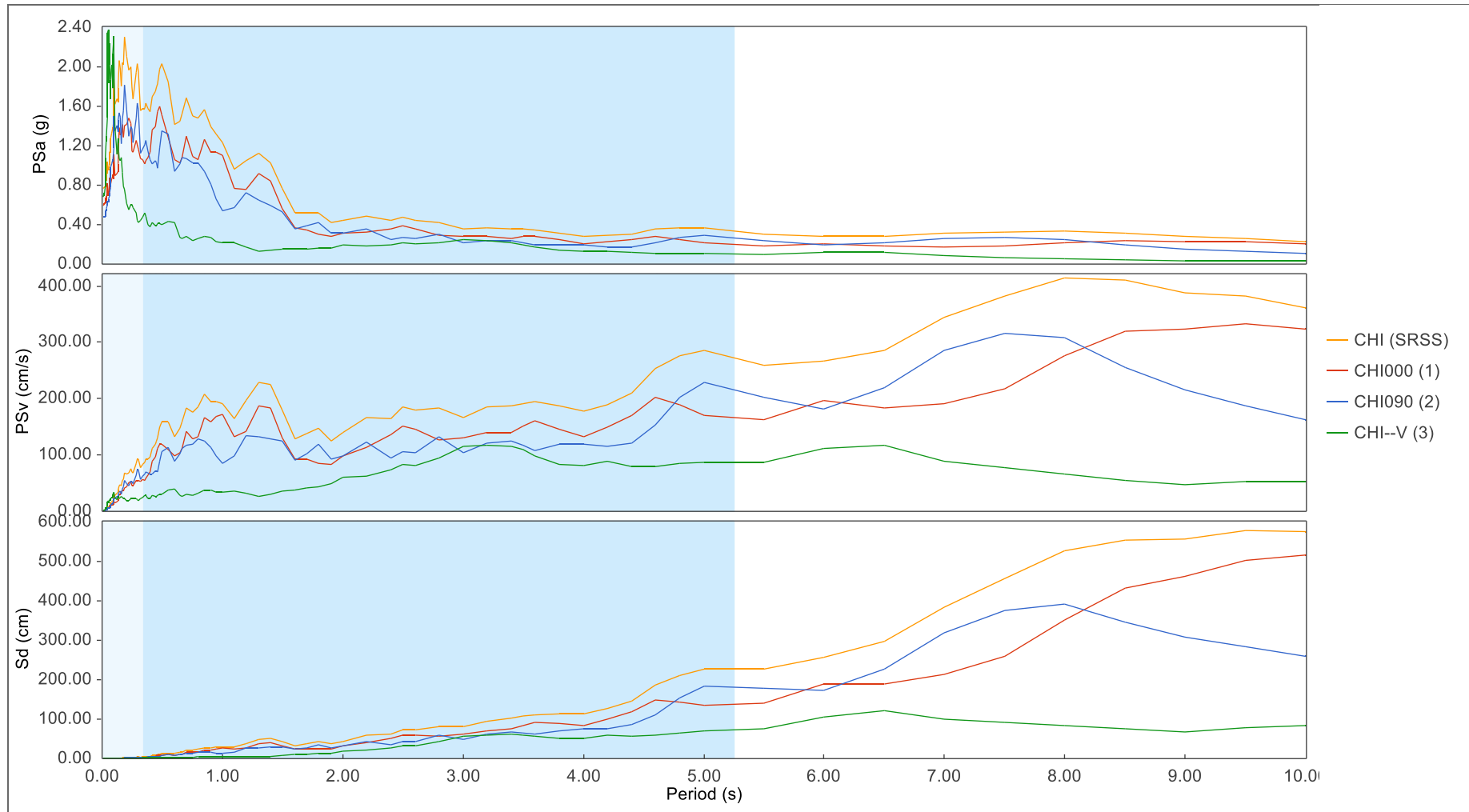


Figure 7: Pseudo-Spectra Chart for CHI and its components, El Mayor-Cucapah (April 04, 2010) at Chihuahua, RSN 5823 – SF=2.41 (MCE Suite – Rec #6)

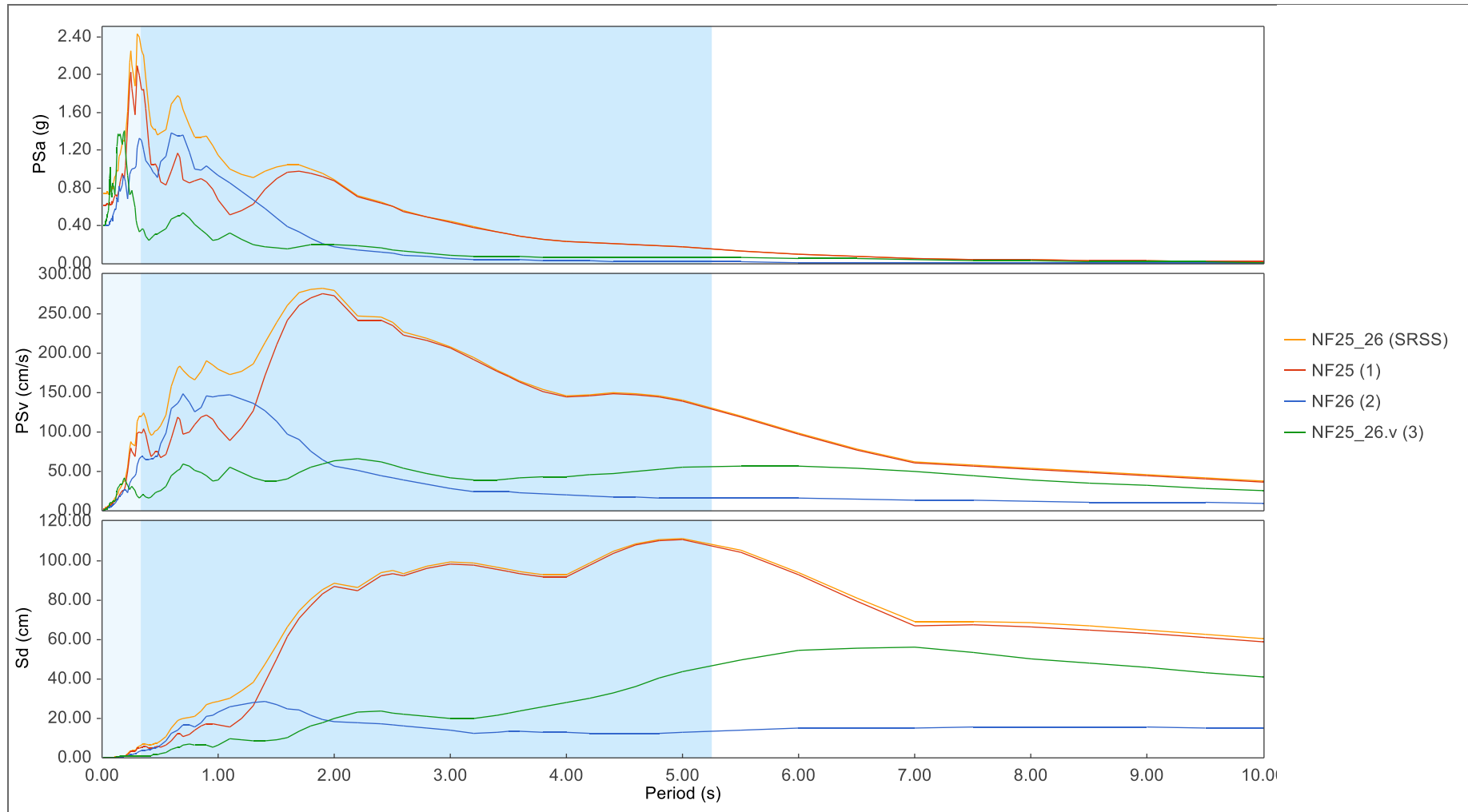


Figure 8: Pseudo-Spectra Chart for NF25\_26 and its components,  $SF=0.61$  (MCE Suite – Rec #7)

## 5. HISTORIES

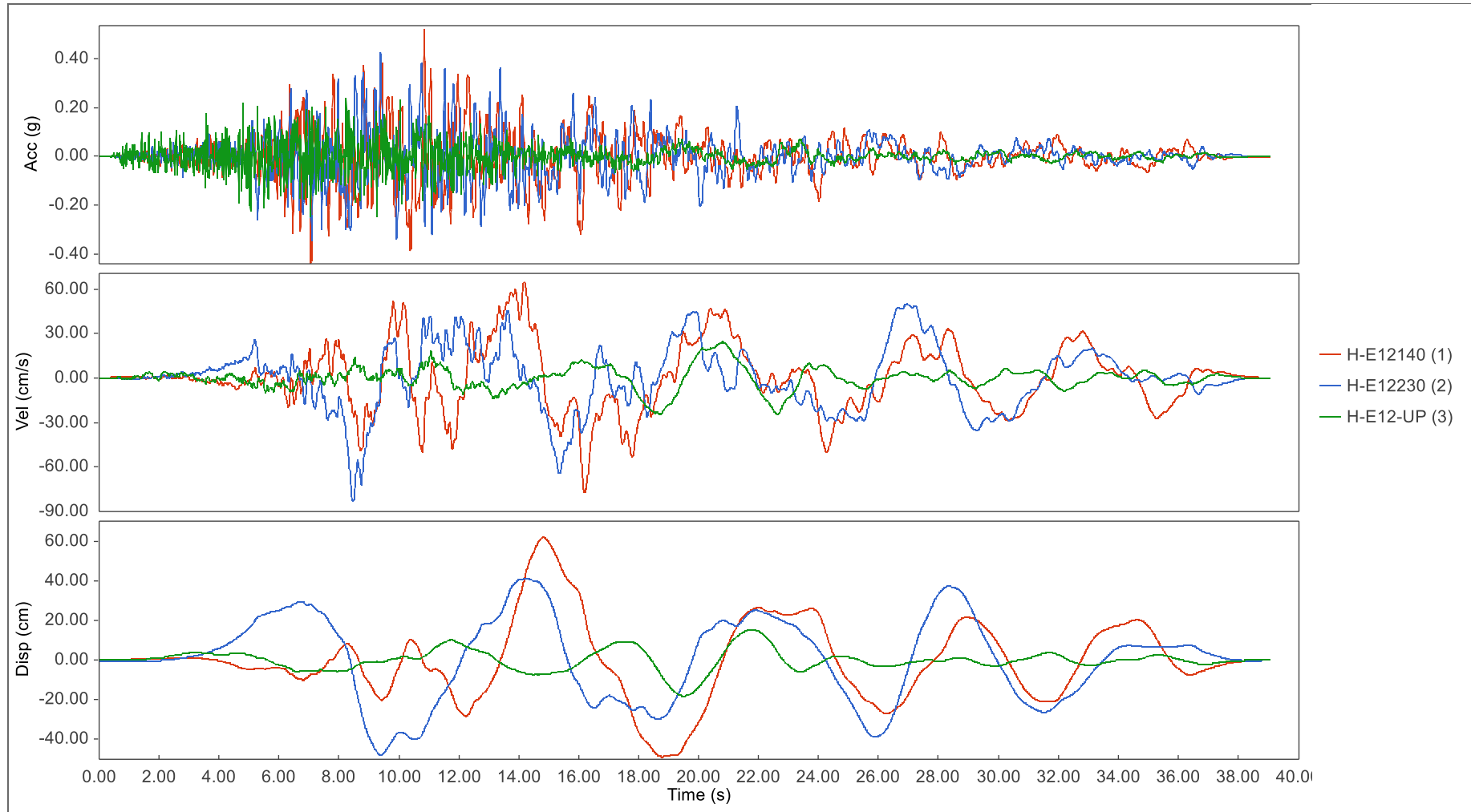


Figure 9: AVD Chart for H-E12-UP components, Imperial Valley-06 (October 15, 1979) at El Centro Array #12, RSN 175 – SF=3.6 (MCE Suite – Rec #1)

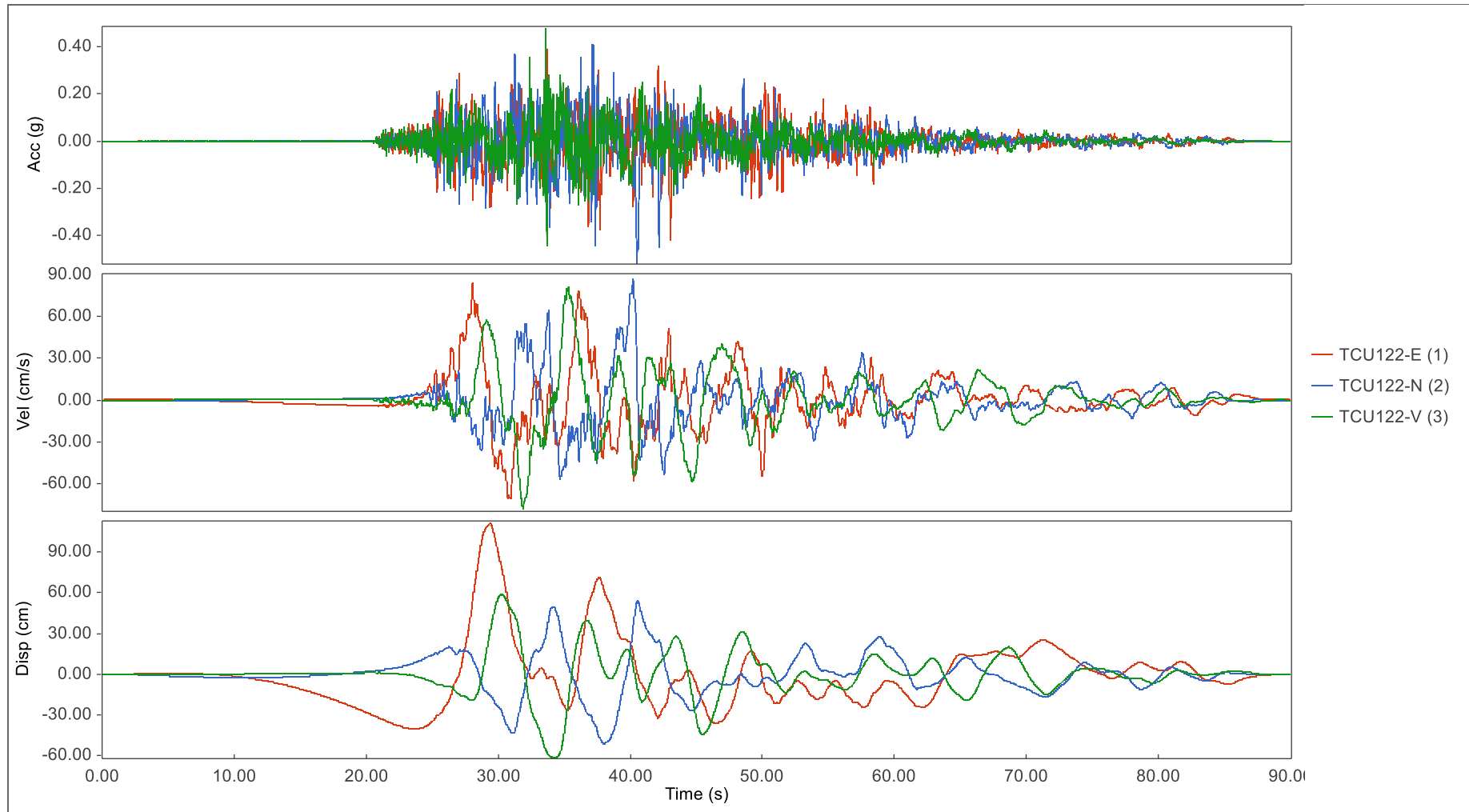


Figure 10: AVD Chart for TCU122-V components, Chi-Chi, Taiwan (September 20, 1999) at TCU122, RSN 1546 – SF=1.99 (MCE Suite – Rec #2)



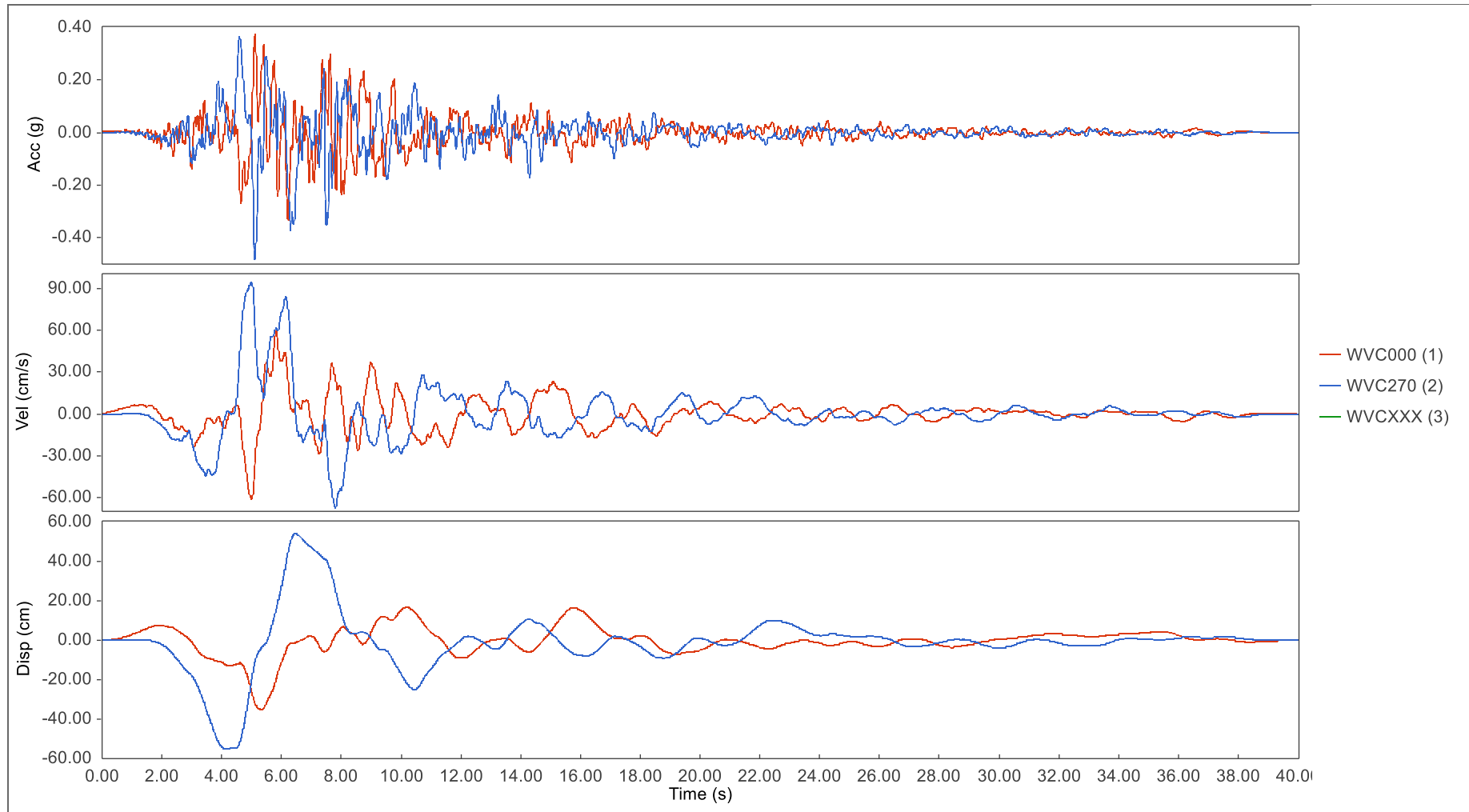


Figure 11: AVD Chart for WVCXXX components, Loma Prieta (October 18, 1989) at Saratoga - W Valley Coll., RSN 803 – SF=1.46 (MCE Suite – Rec #3)

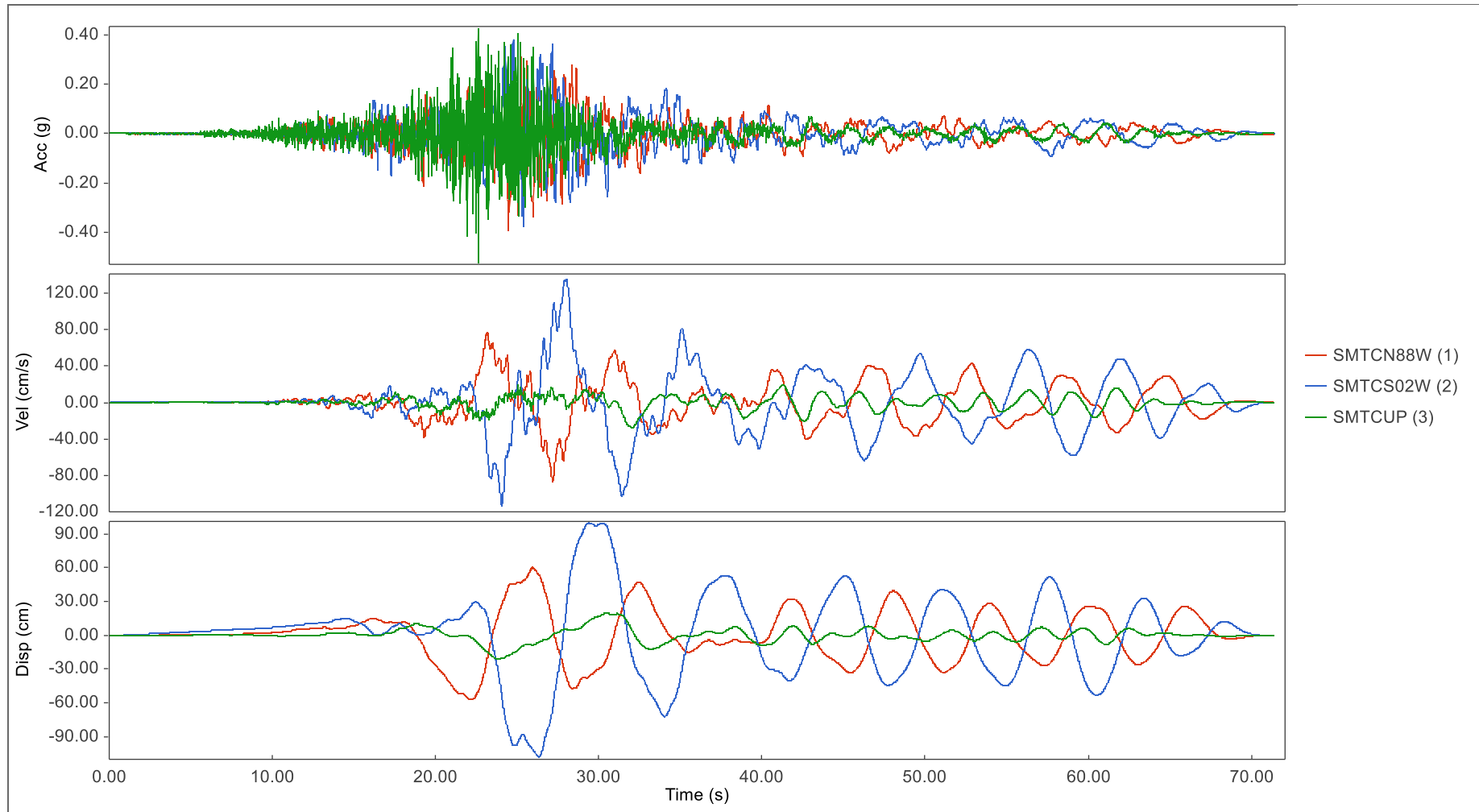


Figure 12: AVD Chart for SMTCUP components, Darfield, New Zealand (September 03, 2010) at Styx Mill Transfer Station , RSN 6969 – SF=2.26 (MCE Suite – Rec #4)

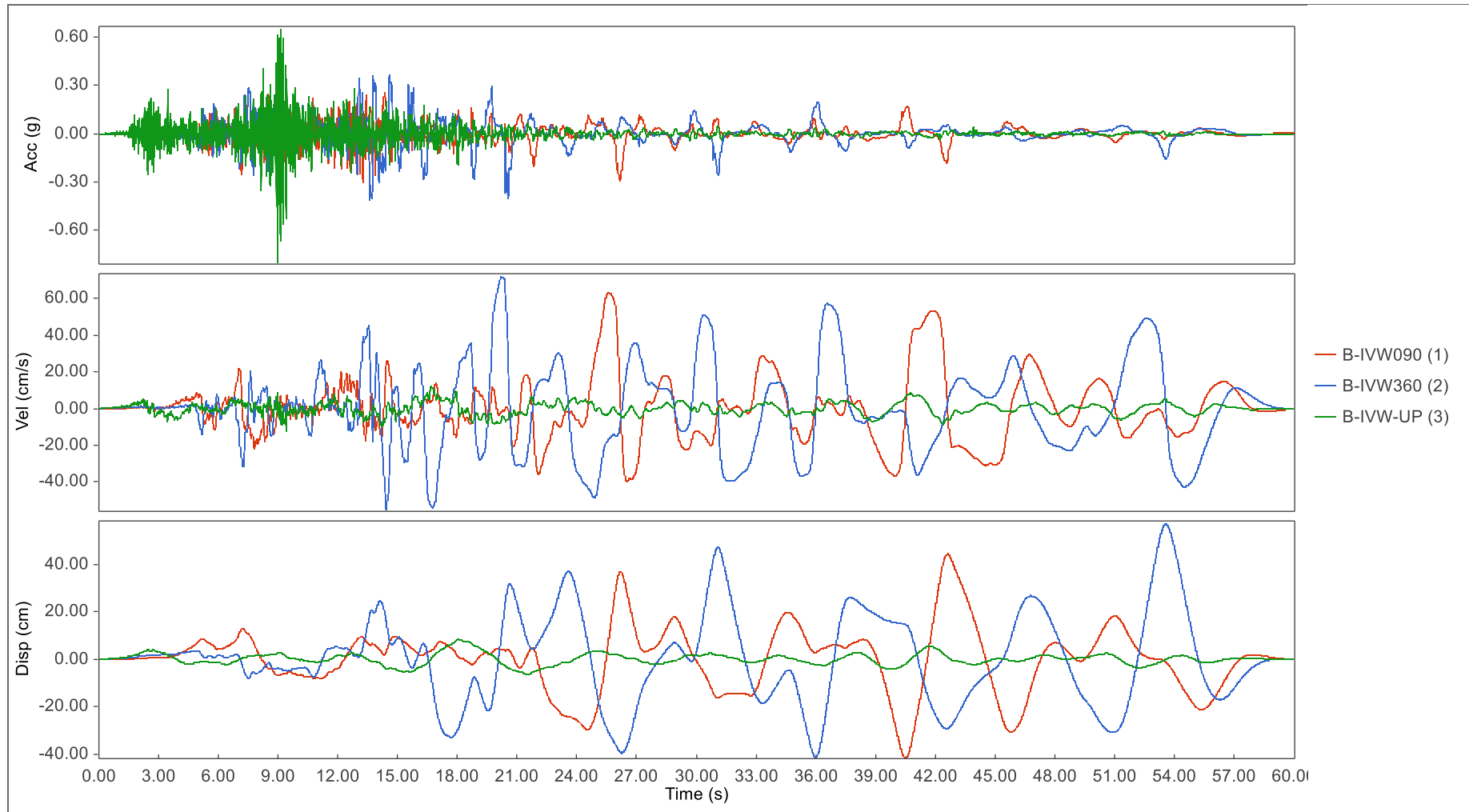


Figure 13: AVD Chart for B-IVW-UP components, Superstition Hills-02 (November 24, 1987) at Imperial Valley Wildlife Liquefaction Array, RSN 729 – SF=1.99 (MCE Suite – Rec #5)

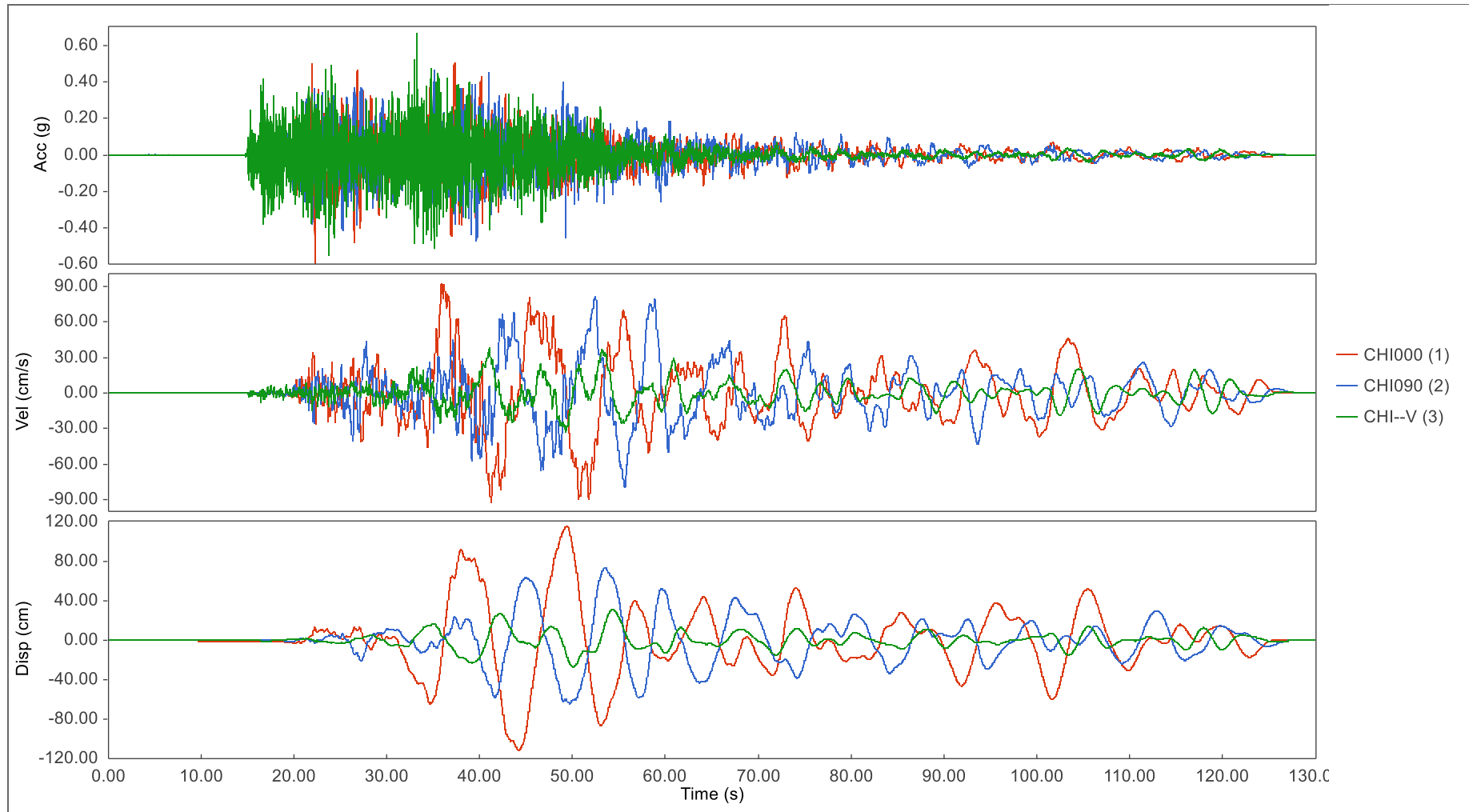


Figure 14: AVD Chart for CHI--V components, El Mayor-Cucapah (April 04, 2010) at Chihuahua, RSN 5823 – SF=2.41 (MCE Suite – Rec #6)

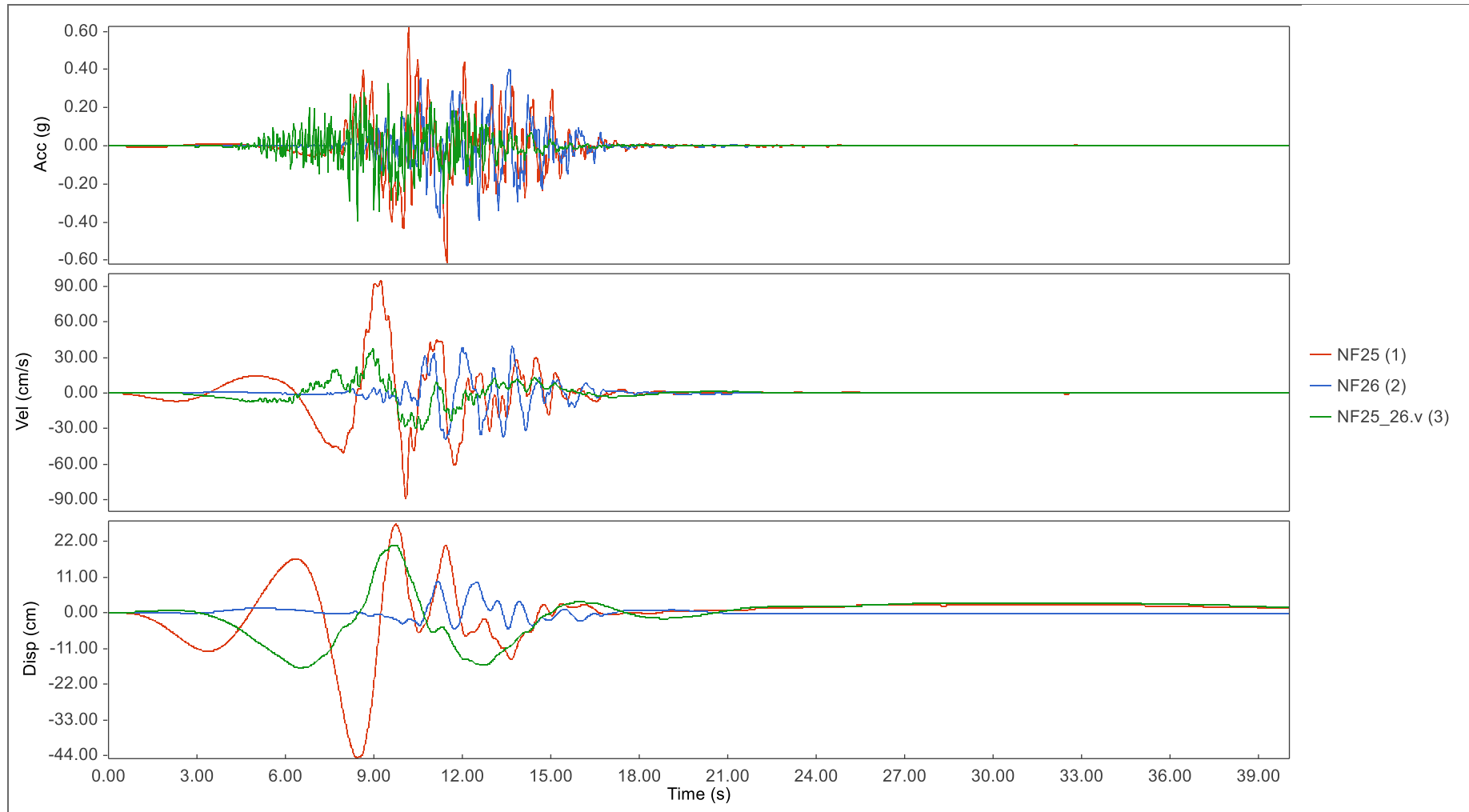


Figure 15: AVD Chart for NF25\_26.v components, SF=0.61 (MCE Suite – Rec #7)

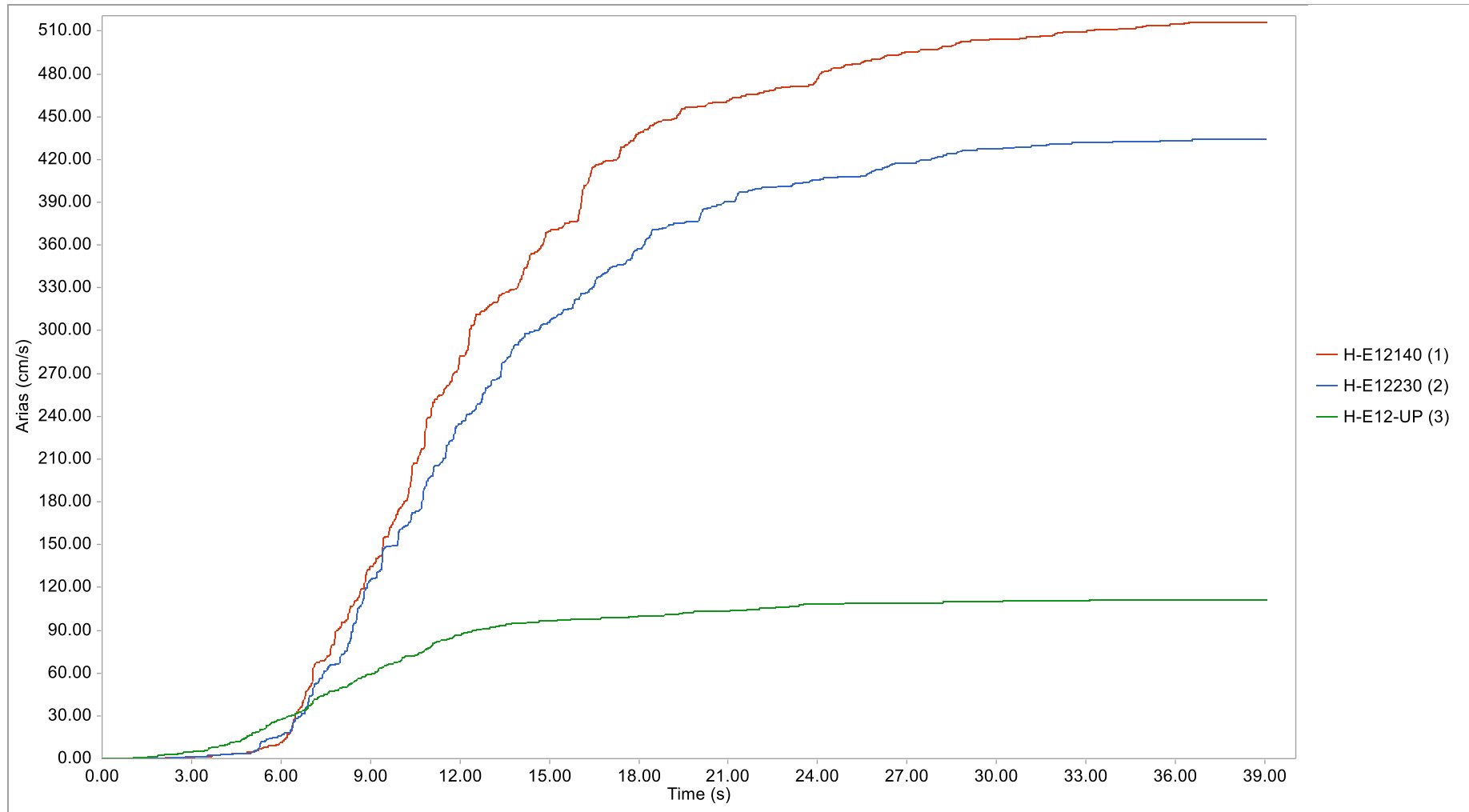


Figure 16: Arias Chart for H-E12-UP components, Imperial Valley-06 (October 15, 1979) at El Centro Array #12, RSN 175 – SF=3.6 (MCE Suite – Rec #1)

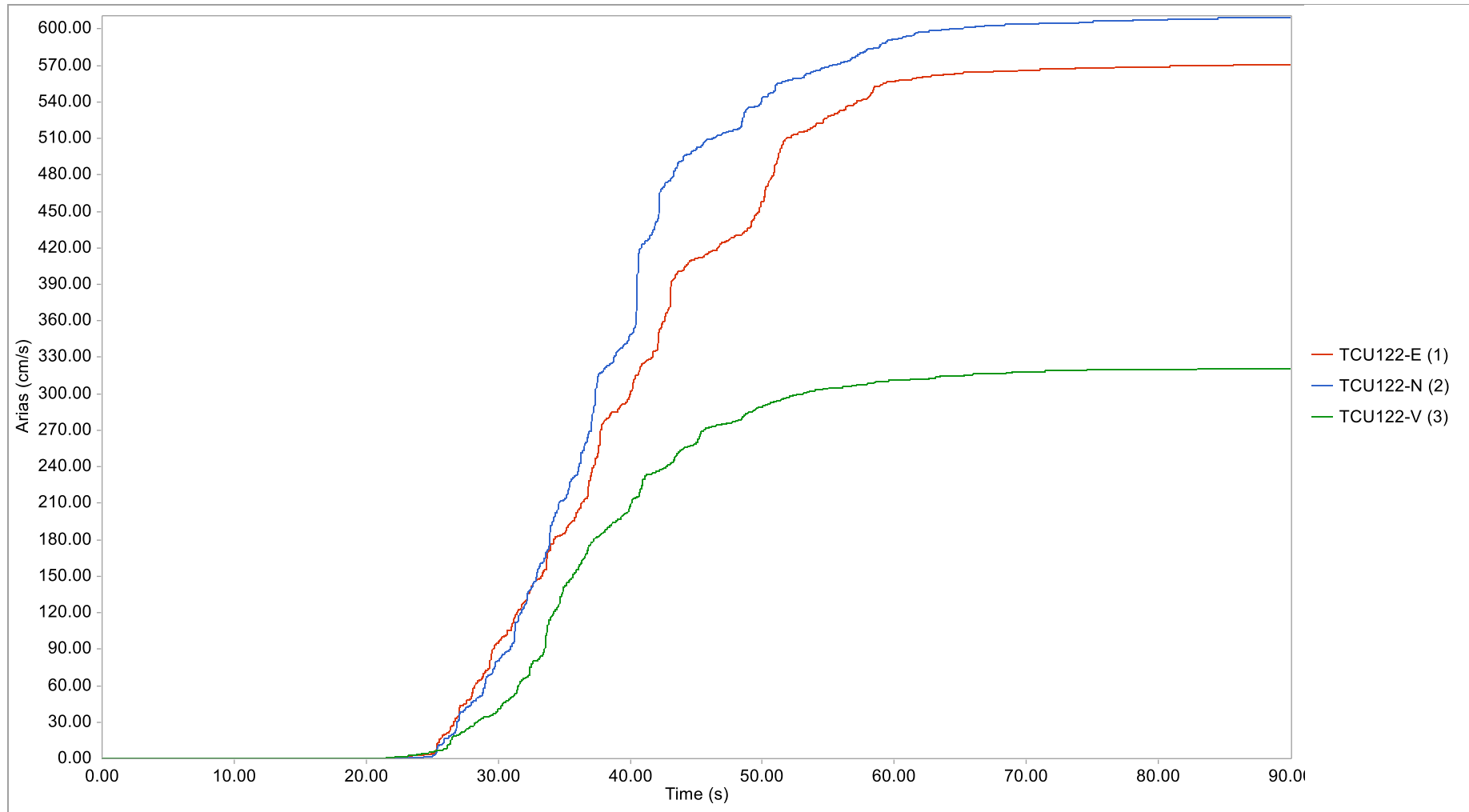


Figure 17: Arias Chart for TCU122-V components, Chi-Chi, Taiwan (September 20, 1999) at TCU122, RSN 1546 – SF=1.99 (MCE Suite – Rec #2)

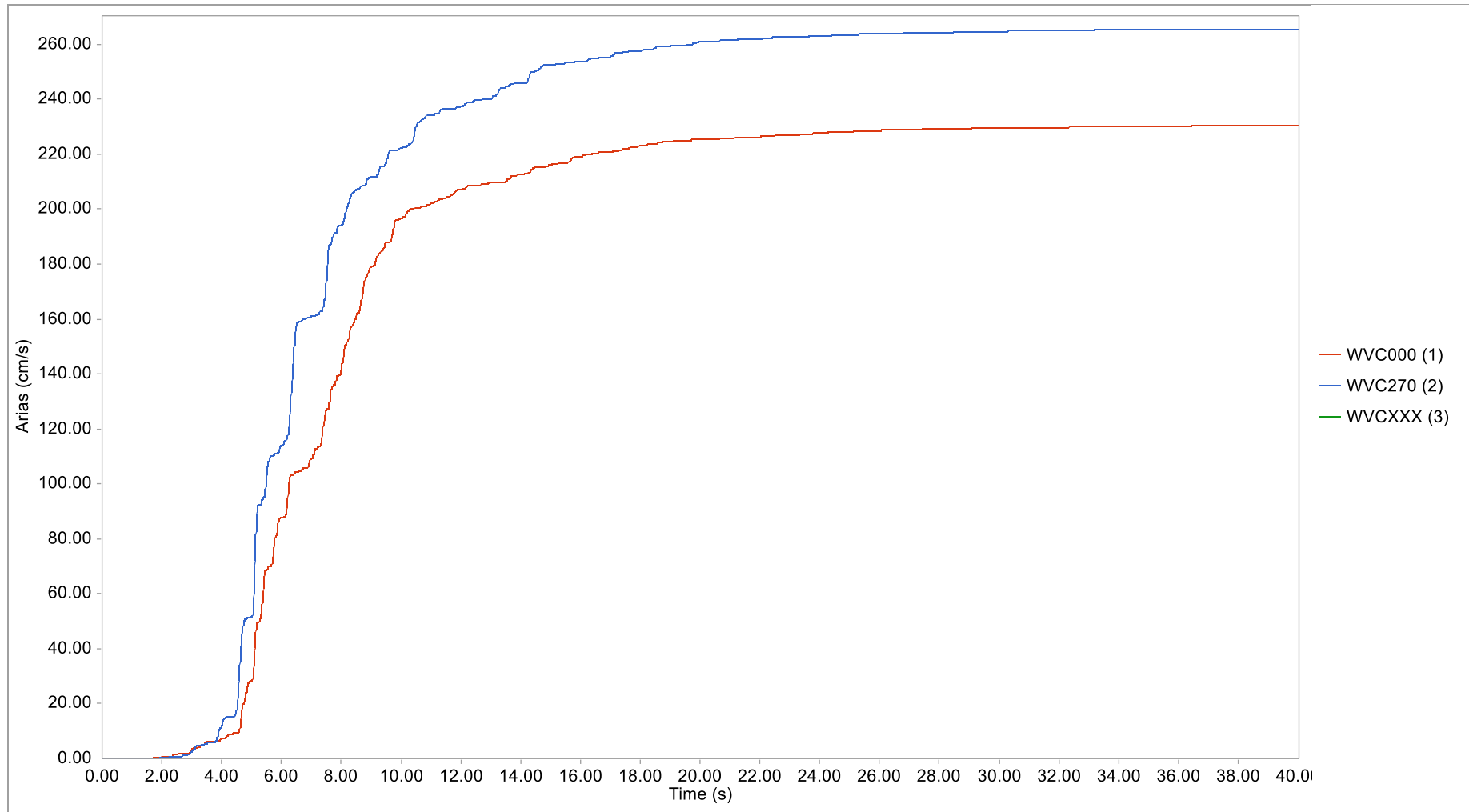


Figure 18: Arias Chart for WVCXXX components, Loma Prieta (October 18, 1989) at Saratoga - W Valley Coll., RSN 803 – SF=1.46 (MCE Suite – Rec #3)



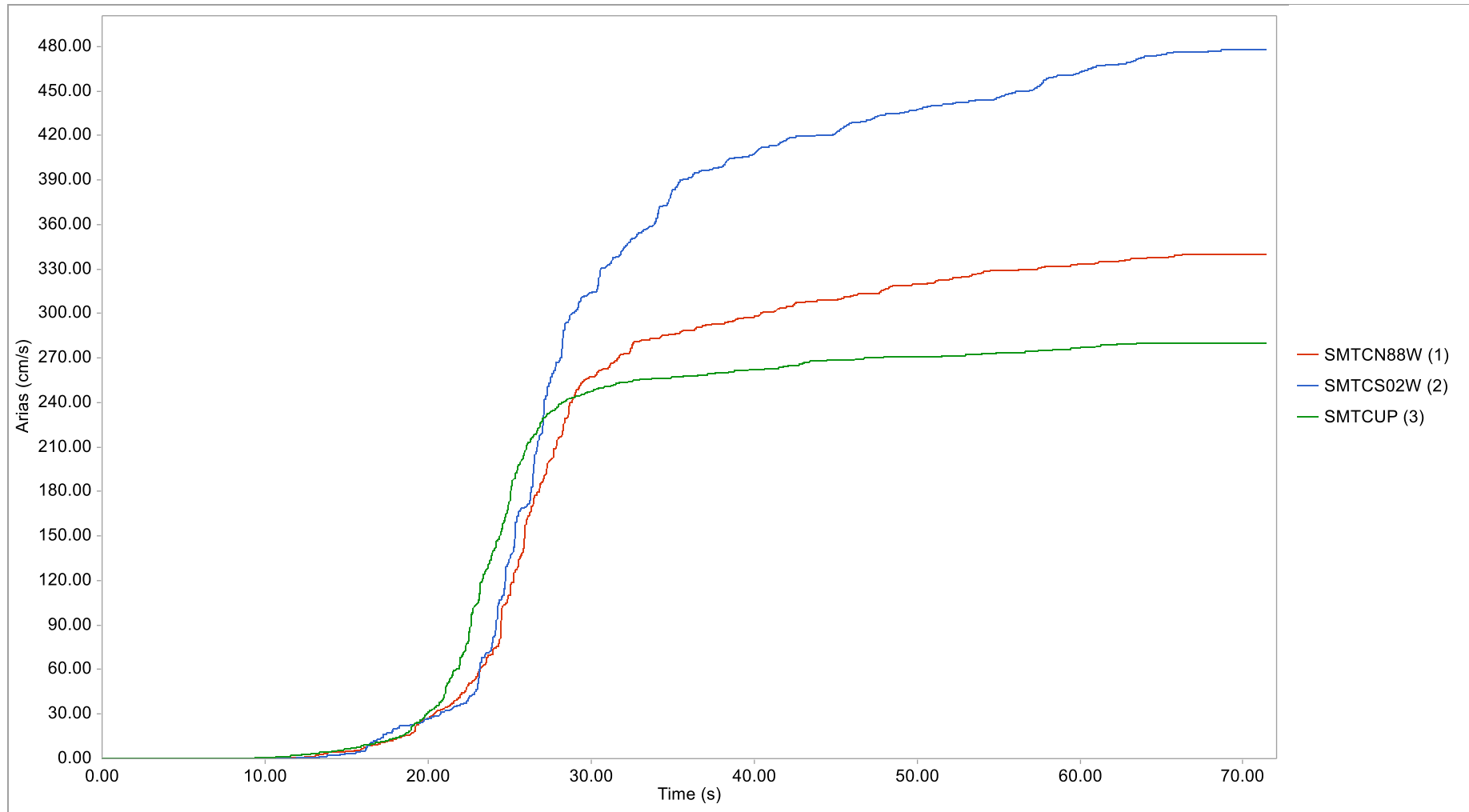


Figure 19: Arias Chart for SMTCUP components, Darfield, New Zealand (September 03, 2010) at Styx Mill Transfer Station, RSN 6969 – SF=2.26 (MCE Suite – Rec #4)

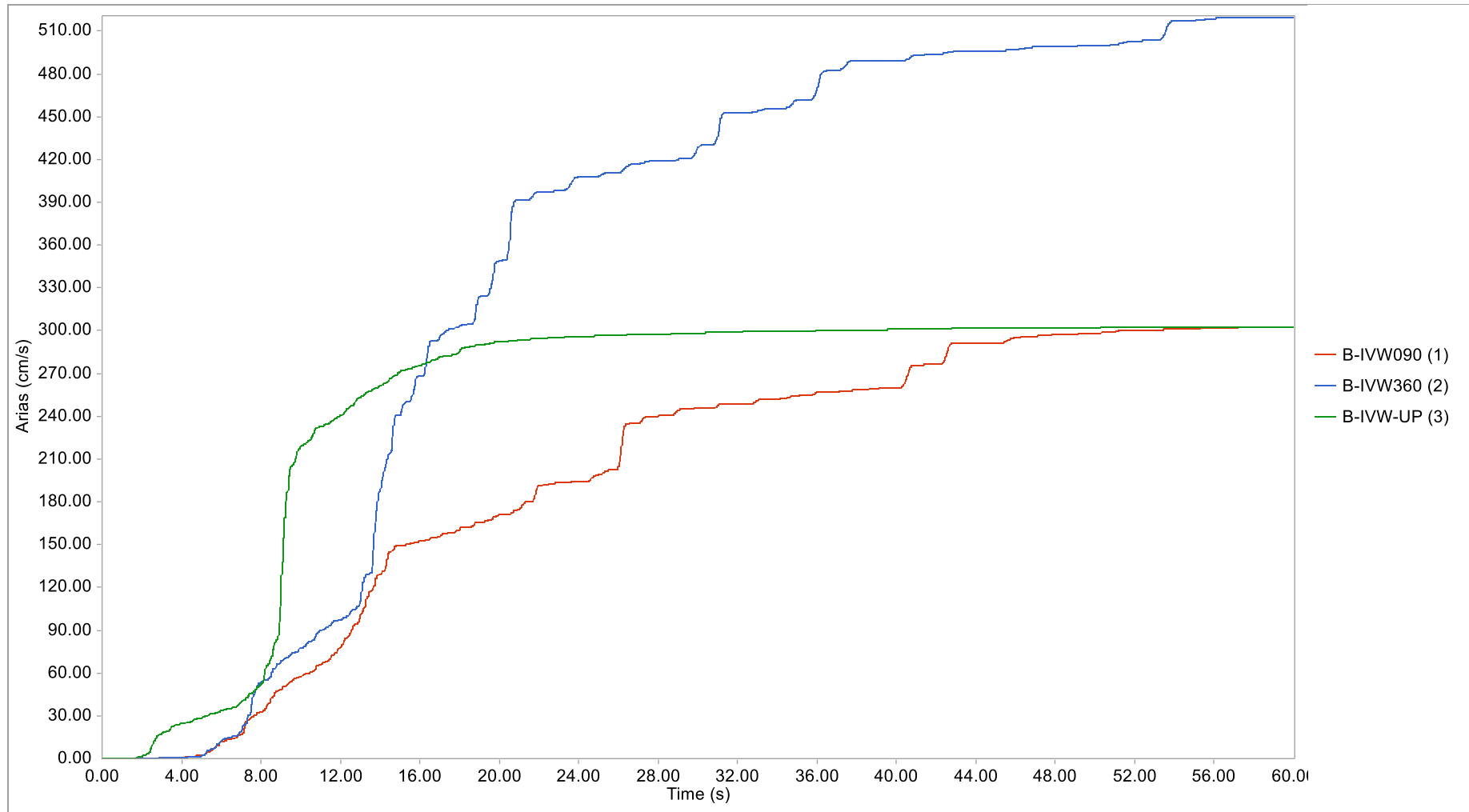


Figure 20: Arias Chart for B-IVW-UP components, Superstition Hills-02 (November 24, 1987) at Imperial Valley Wildlife Liquefaction Array, RSN 729 – SF=1.99 (MCE Suite – Rec #5)

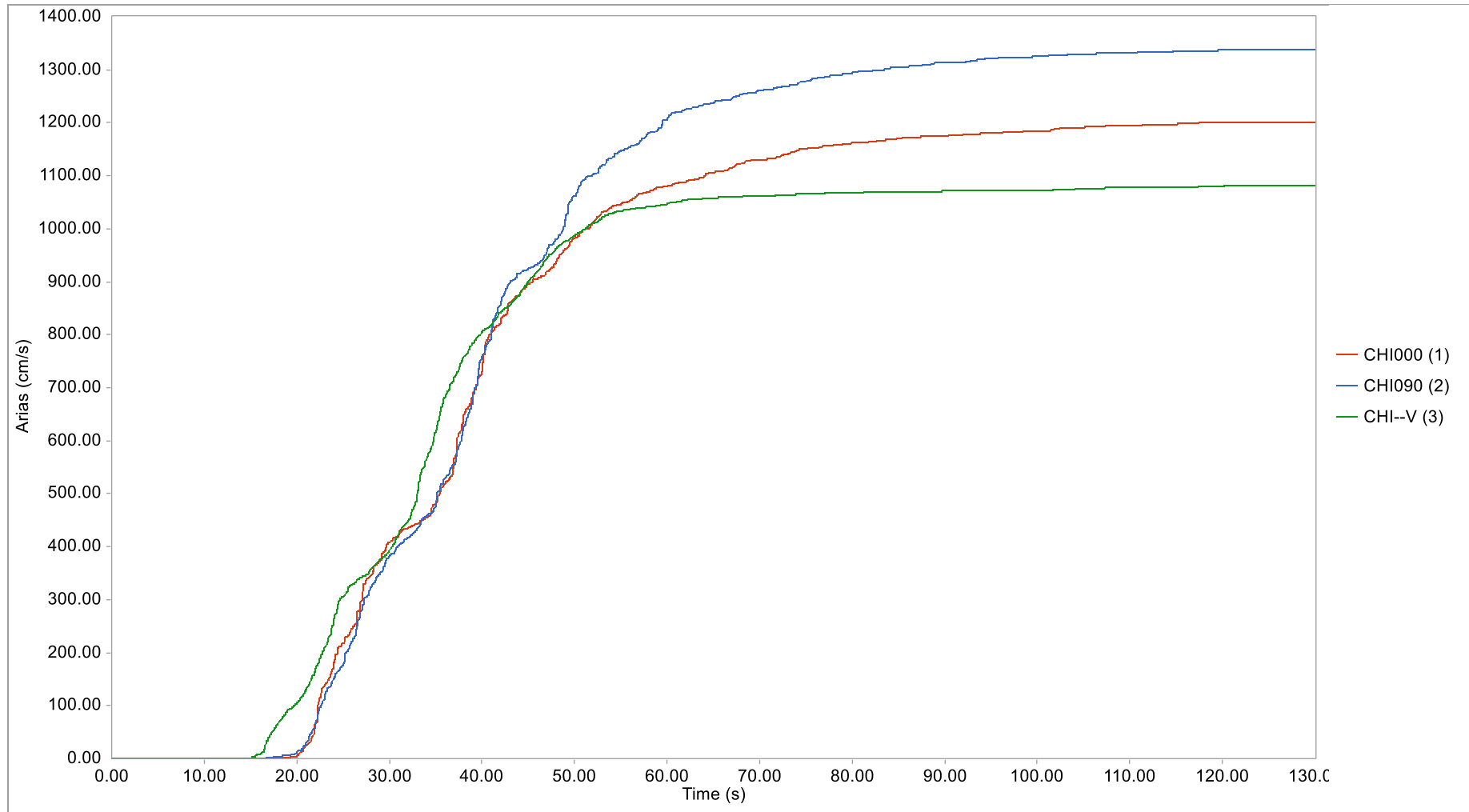


Figure 21: Arias Chart for CHI--V components, El Mayor-Cucapah (April 04, 2010) at Chihuahua, RSN 5823 - SF=2.41 (MCE Suite - Rec #6)

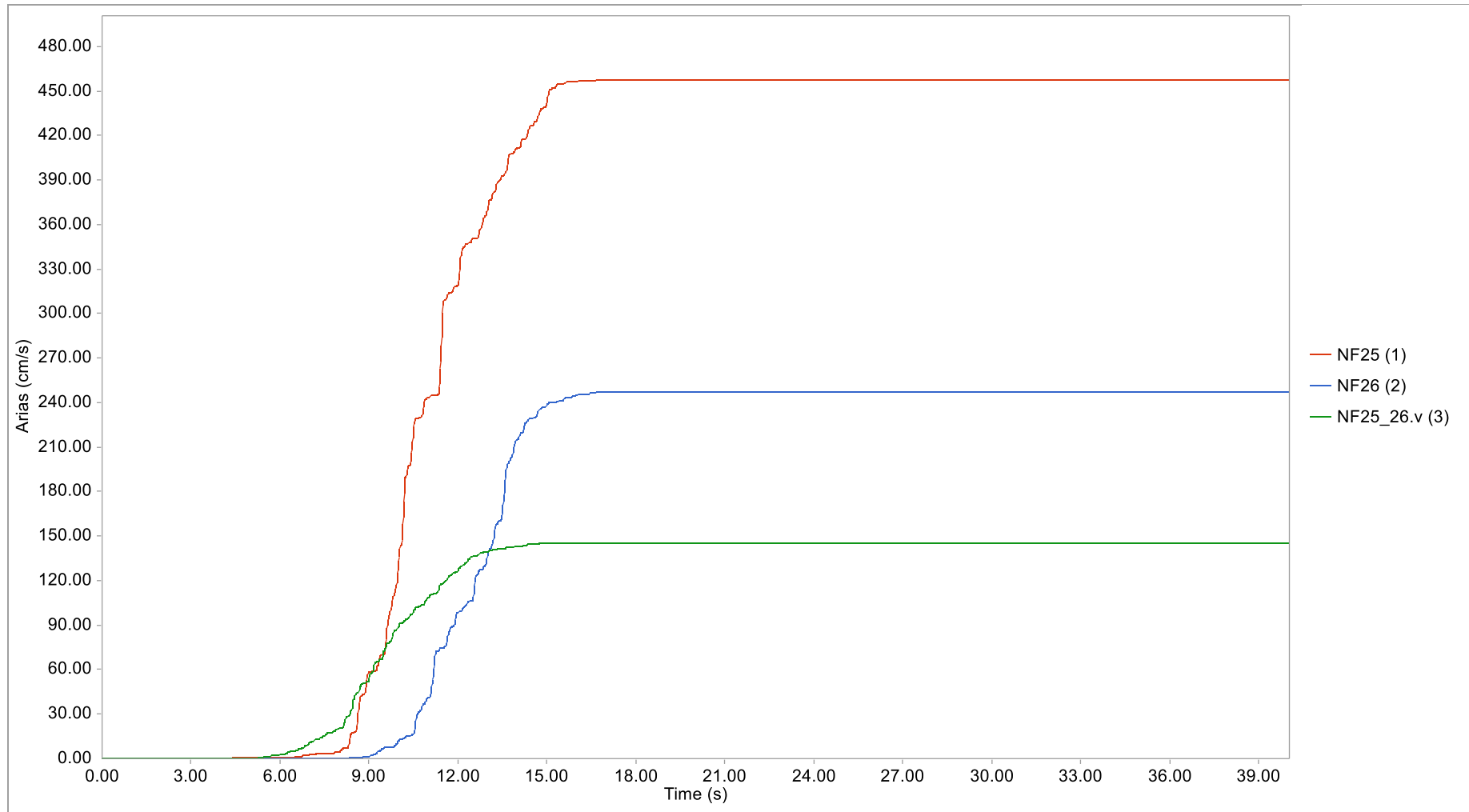


Figure 22: Arias Chart for NF25\_26.v components, SF=0.61 (MCE Suite - Rec #7)