

Titration Complete

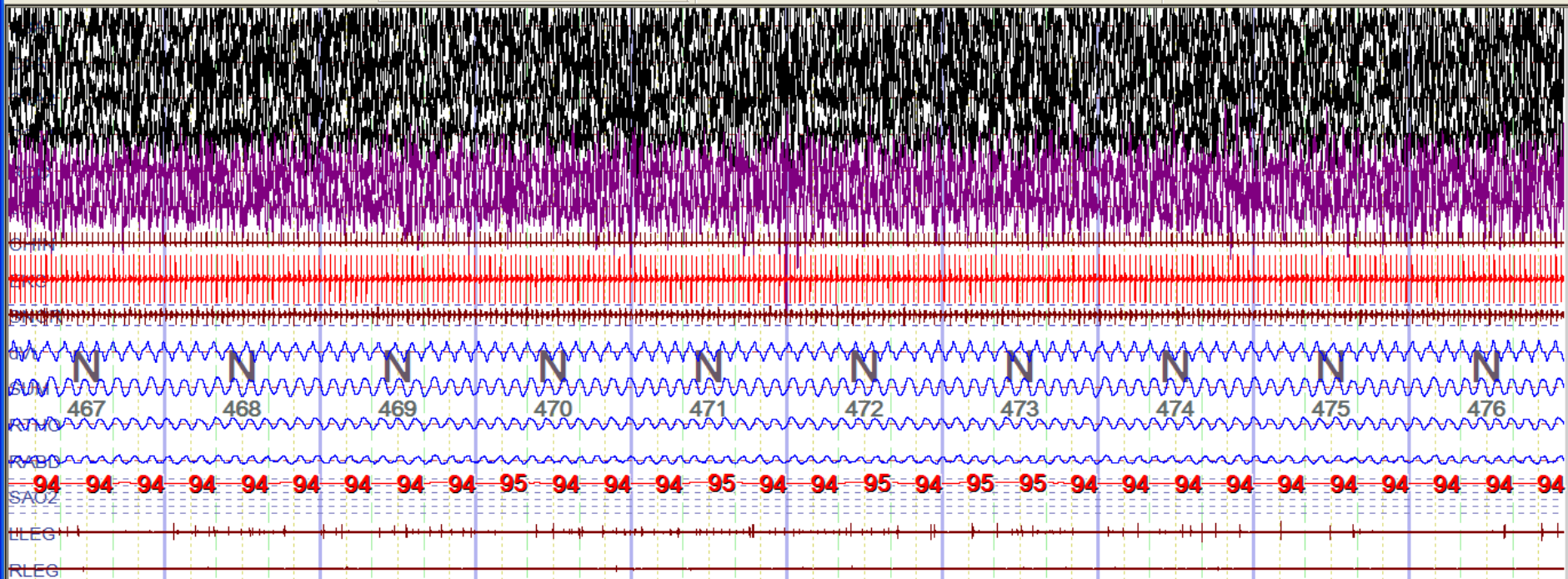
- Excellent titration when Flow Volume Loop has no flattening or dropping during inspiration. Also note, the Konno-Mead Loop has no mixing of inspiratory and expiratory loops with each other as well as a decent deflection.

STARR, RINGO

O2 CH MH OH CA MA OA SN PB CS Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2

N W 1 2 3 4 R M

Post New



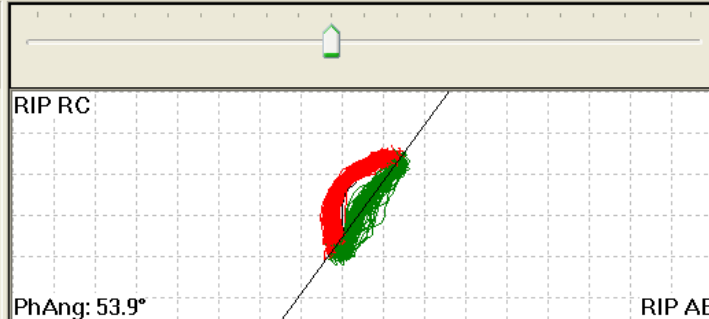
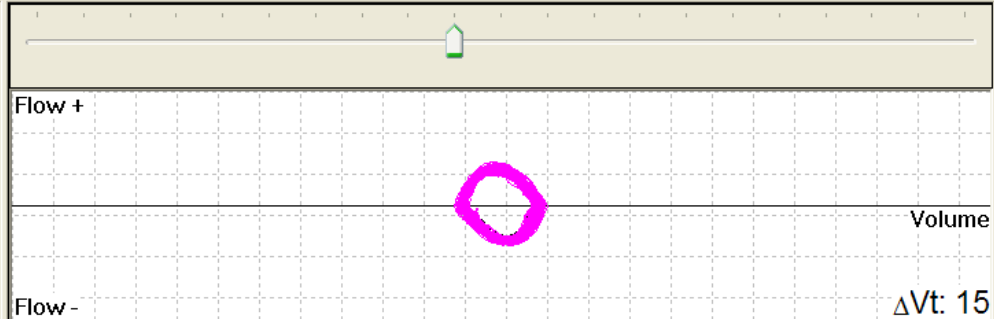
3:53:30 Tx 0.0/10.0/0.00 300

7
8
9
1
2
3
4
5

Breath

Flow +

Flow -



ΔVt : 15 PhAng: 53.9°

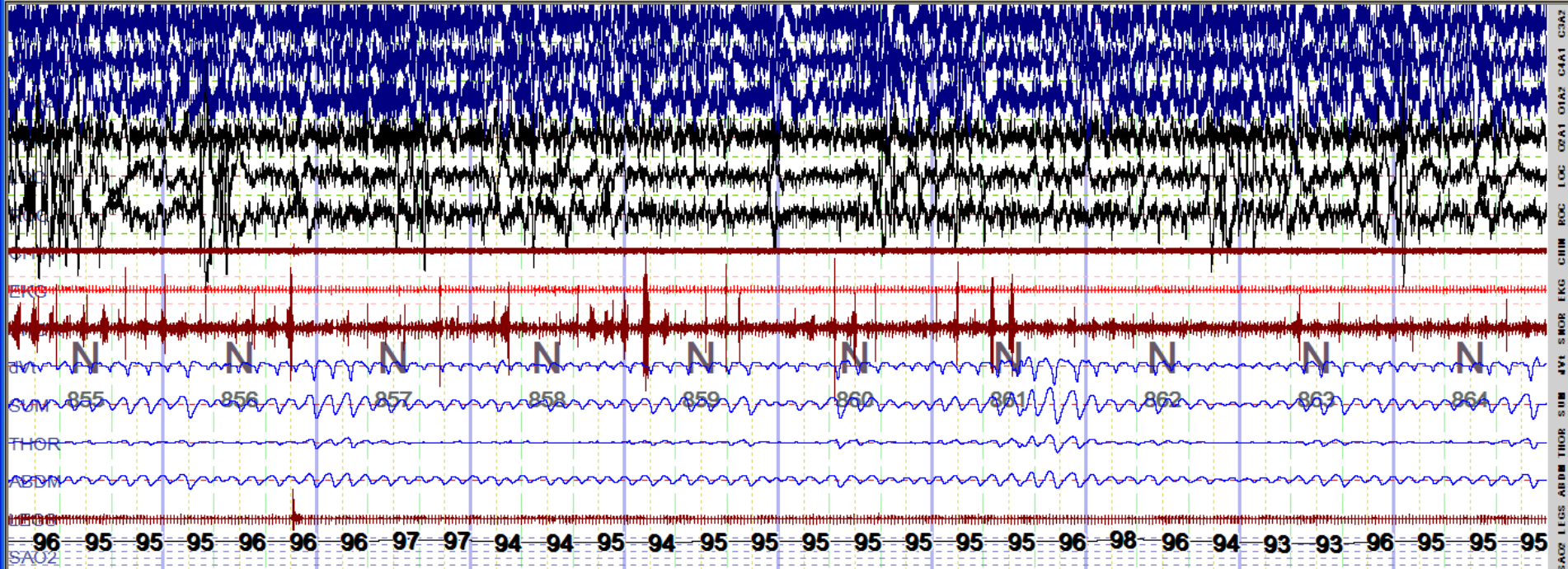
OSH'

- Obstructive Sleep Hypopneas

HART, NANCY

O2 CH MH OH CA MA OA SN PB CS Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2

N W 1 2 3 4 R M



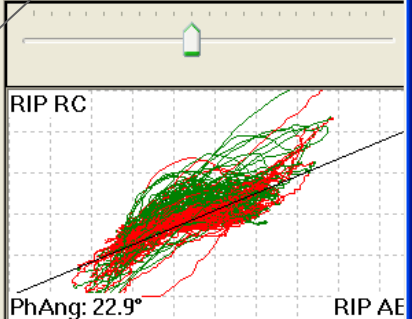
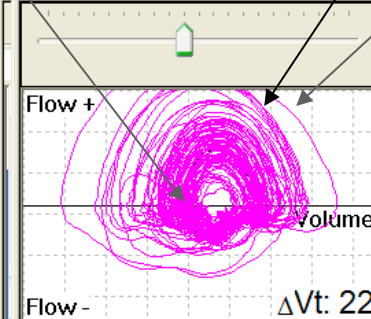
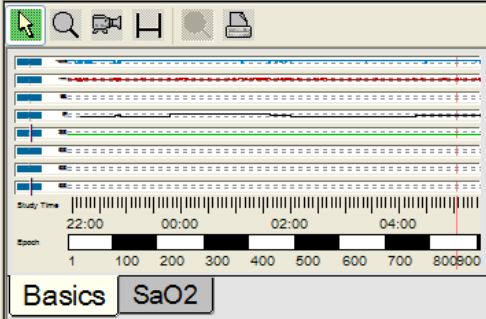
← → ↺ ↻ 📄 📁 🔍 🖨 🗑 👤 🧠 🫁 🩸 📊

Thick donut = Hypopnea

Break thru breaths = Obstructive process

7:07:30 Tx 0.0/0.0/0.0 800

Epoch	Stage	SaO2	HR	Event1	BPos	Ep	Ev	Tech
851	N	92	95		L	0.0	0.0	
852	N	93	98		L	0.0	0.0	
853	N	94	98		L	0.0	0.0	
854	N	93	96		L	0.0	0.0	
855	N	95	96		L	0.0	0.0	
856	N	95	101		L	0.0	0.0	
857	N	96	101		L	0.0	0.0	
858	N	94	103		L	0.0	0.0	
859	N	94	96		L	0.0	0.0	
860	N	94	95		L	0.0	0.0	



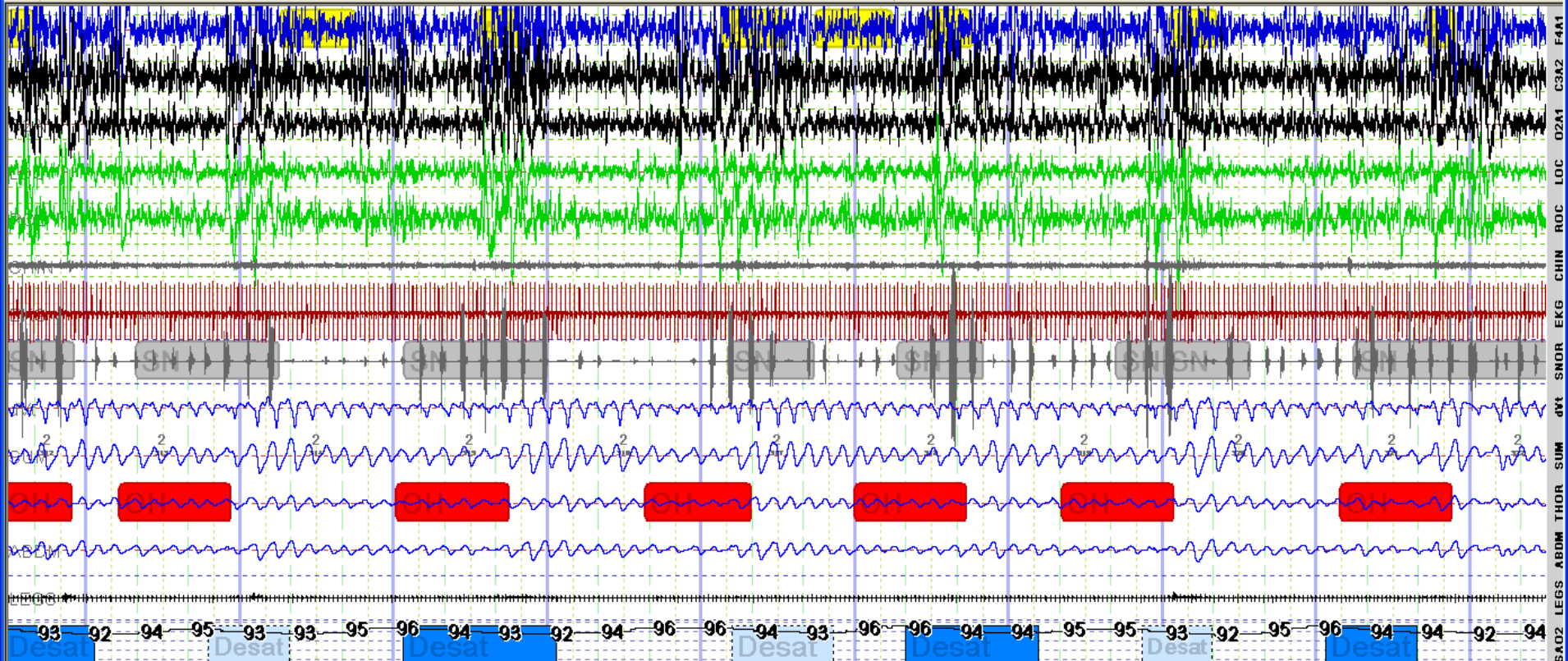
Patient, Loop



New

N W 1 2 3 4 R M

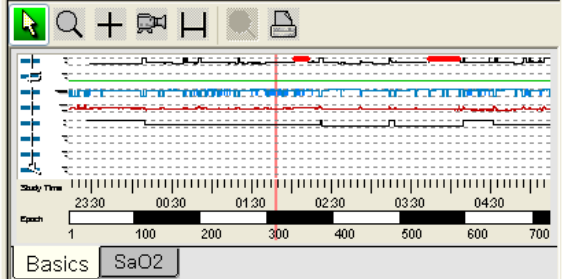
O2 CH MH OH CA MA OA SN PB CS Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2



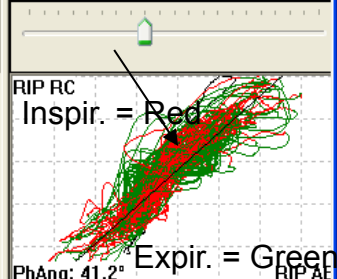
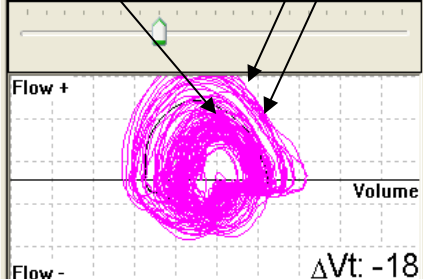
Thick donut = Hyponea. Break thru breaths = Obstruction

Mixing Insp. & Exp. increased effort = Obstructive process

Epoch	Stage	SaO2
312	2	92
313	2	91
314	2	92
316	2	92
317	2	93
318	2	93



Epoch	Breath	Ins Ti...	Exp ...
312	1	2.5	1.5
312	2	2.5	1.6
312	3	2.5	1.5
312	4	2.7	1.3
312	5	2.1	1.4
312	6	2.2	1.1
312	7	2.8	1.4



$\Delta Vt: -18$

PhAng: 41.2°

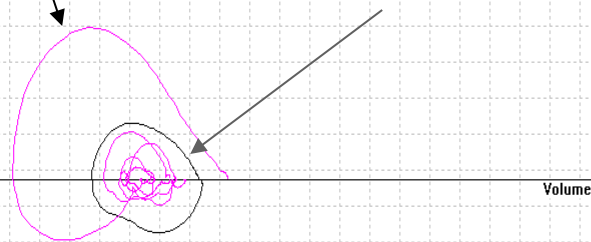
Inspir. = Red
Exp. = Green

Flow + (Exp)

RIP RC

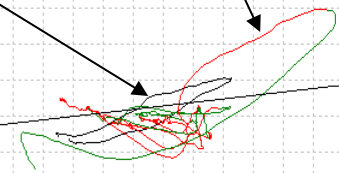
Breakthrough Breath indicating Obstructive process

Baseline Breath



Breakthrough Breath indicating Obstructive process

Baseline Breath



Flow - (Insp)

$\Delta Vt: -23$ PhAng: 5.6°

RIP AE

CSH's

- Central Sleep Hypopneas

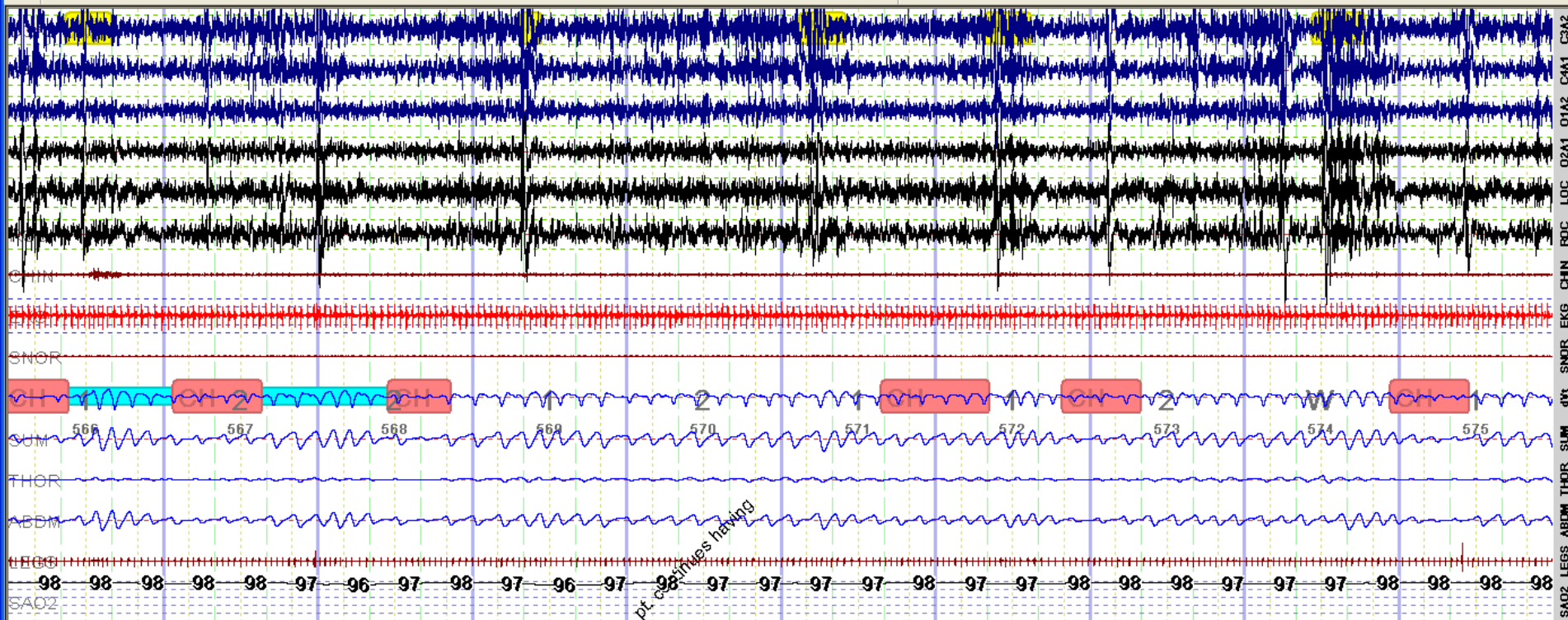
Cook, Will



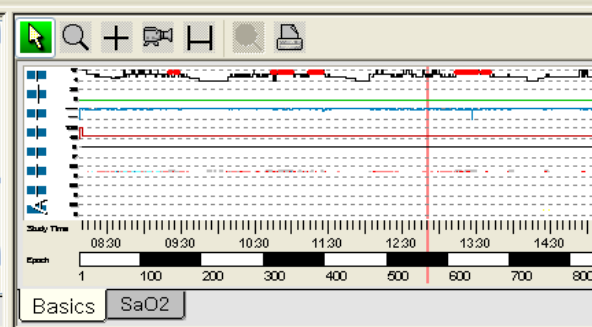
Search bar with 'New' button

N W 1 2 3 4 R M

O2 CH MH OH CA MA OA SN PB CS Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2



Epoch	Stage	SaO2	HR	Events	BP...
566	1	97	57	AR	B
567	2	97	57	CH	B
568	2	96	57	CH	B
569	1	96	57	AR	B
570	2	97	57		B
571	1	97	57	AR,CH	B
572	1	97	57	AR,CH	B
573	2	97	57		B
574	W	97	57	AR,CH	B



All Decreased Loops are within the baseline loop = Central Process Donut = Hypopnea

No mixing of inspiratory/expiratory breaths = Central Process

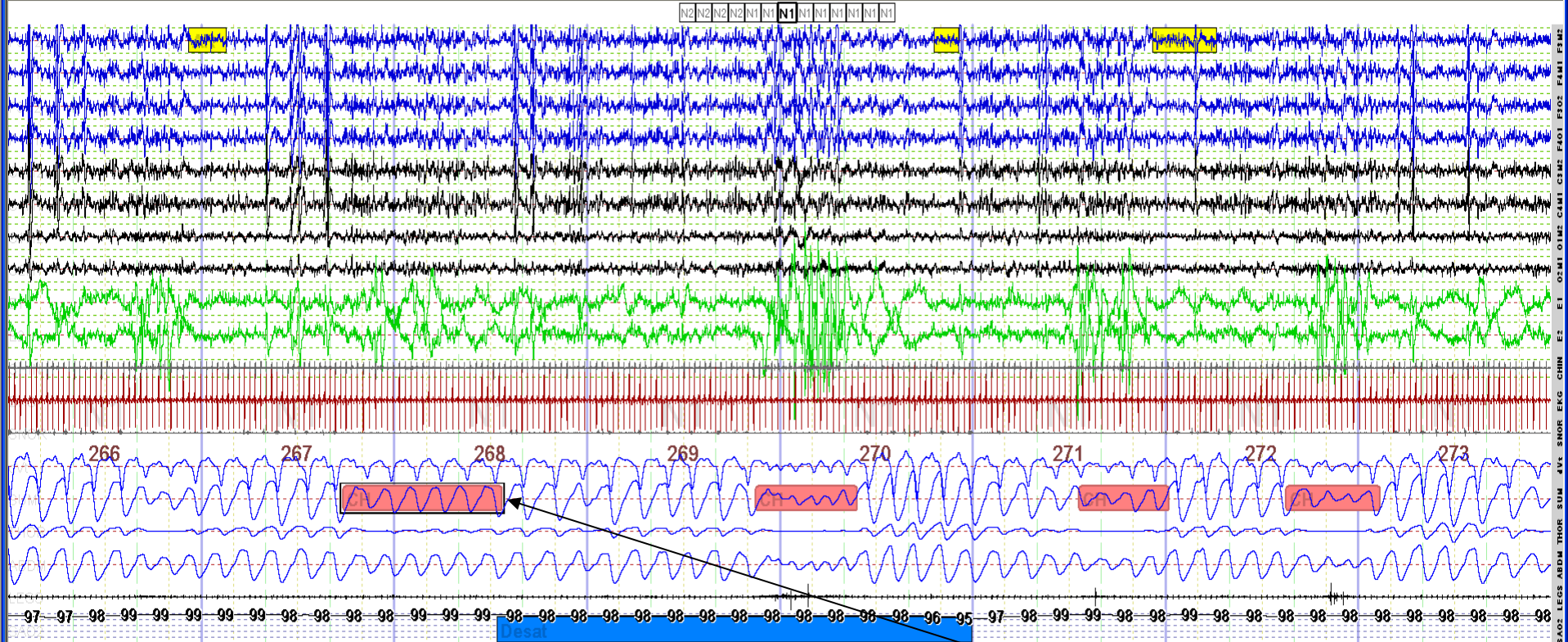
Flow + Volume

Flow - $\Delta Vt: -54$

RIP RC

PhAng: 18.6°

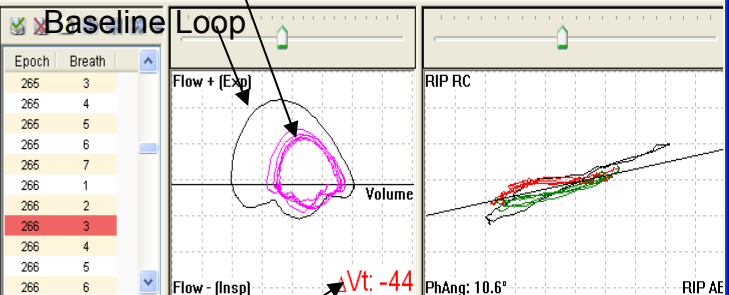
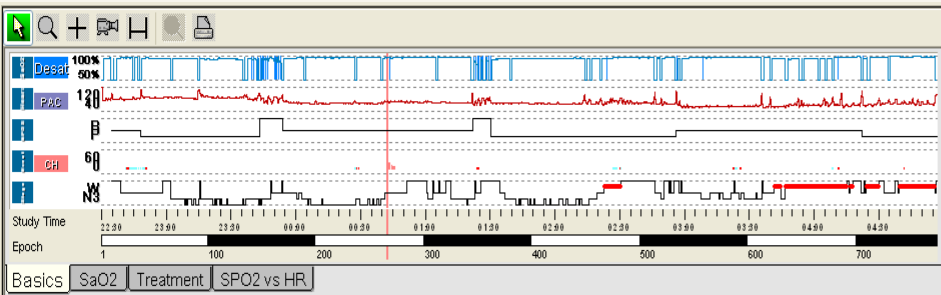
RIP AB



CSH with correlating Flow Loop with a 44% reduction of flow from

Epoch

197	00:13:32	- pt sle
258	00:44:15	- pt ε
319	01:15:13	- pt r
380	01:47:50	- pt h
441	02:18:29	- pt ε
502	02:49:51	- pt ε
539	03:09:32	- Pt. s



Flow + [Exp]

RIP RC

CSH with a 65 % reduction of flow from Baseline Loop

Baseline Loop

Volume

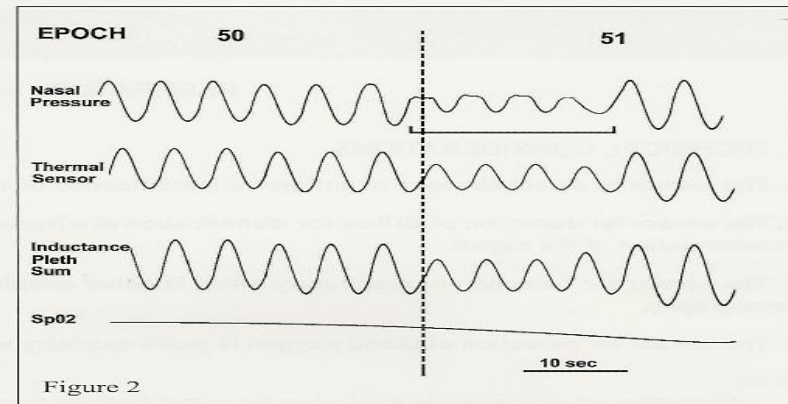
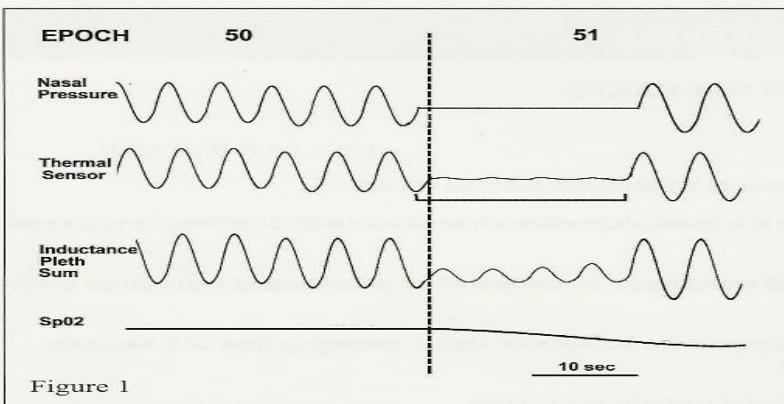
Flow - [Insp]

$\Delta Vt: -65$ PhAng: 11.6°

RIP AE

2007 AASM guidelines for classification of Hypopneas

- If Classification of Hypopneas are to be made, according to 2007 AASM scoring manual page 46, Calibrated RIP has to be utilized.



4. HYPOPNEA RULES

A. Score a hypopnea if all of the following criteria are met (See Figure 2):

[RECOMMENDED]

- 1) The nasal pressure signal excursions (or those of the alternative hypopnea sensor) drop by $\geq 30\%$ of baseline
- 2) The duration of this drop occurs for a period lasting at least 10 seconds
- 3) There is a $\geq 4\%$ desaturation from pre-event baseline
- 4) At least 90% of the event's duration must meet the amplitude reduction of criteria for hypopnea

B. Score a hypopnea if all of the following criteria are met:

[ALTERNATIVE]

- 1) The nasal pressure signal excursions (or those of the alternative hypopnea sensor) drop by $\geq 50\%$ of baseline
- 2) The duration of this drop occurs for a period lasting at least 10 seconds
- 3) There is a $\geq 3\%$ desaturation from pre-event baseline or the event is associated with arousal
- 4) At least 90% of the event's duration must meet the amplitude reduction of criteria for hypopnea

Note:

1. The definition of hypopnea used (VII.4.A or VII.4.B) should be specified in the PSG report.
2. Classification of a hypopnea as obstructive, central, or mixed should not be performed without a quantitative assessment of ventilatory effort (esophageal manometry, calibrated respiratory inductance plethysmography, or diaphragmatic/intercostal EMG).

5. RESPIRATORY EFFORT-RELATED AROUSAL RULE

A. Score a respiratory effort-related arousal (RERA) (Figure 3):

[OPTION]

- 1) If there is a sequence of breaths lasting at least 10 seconds characterized by increasing respiratory effort or flattening of the nasal pressure waveform leading to an arousal from sleep when the sequence of breaths does not meet criteria for an apnea or hypopnea.

Notes:

1. With respect to scoring a RERA, use of esophageal pressure is the preferred method of assessing change in respiratory effort, although nasal pressure and inductance plethysmography can be used.

6. HYPOVENTILATION RULE

[OPTION]

A. Score hypoventilation during sleep as present if there is a ≥ 10 mm Hg increase in PaCO_2 during sleep in comparison to an awake supine value.

Notes:

1. Persistent oxygen desaturation is not sufficient to document hypoventilation.
2. An increased PaCO_2 value obtained immediately upon awakening from sleep is suggestive of sleep hypoventilation.
3. At this time, there is insufficient evidence to allow specification of sensors for direct or surrogate measures of PaCO_2 . Both end-tidal

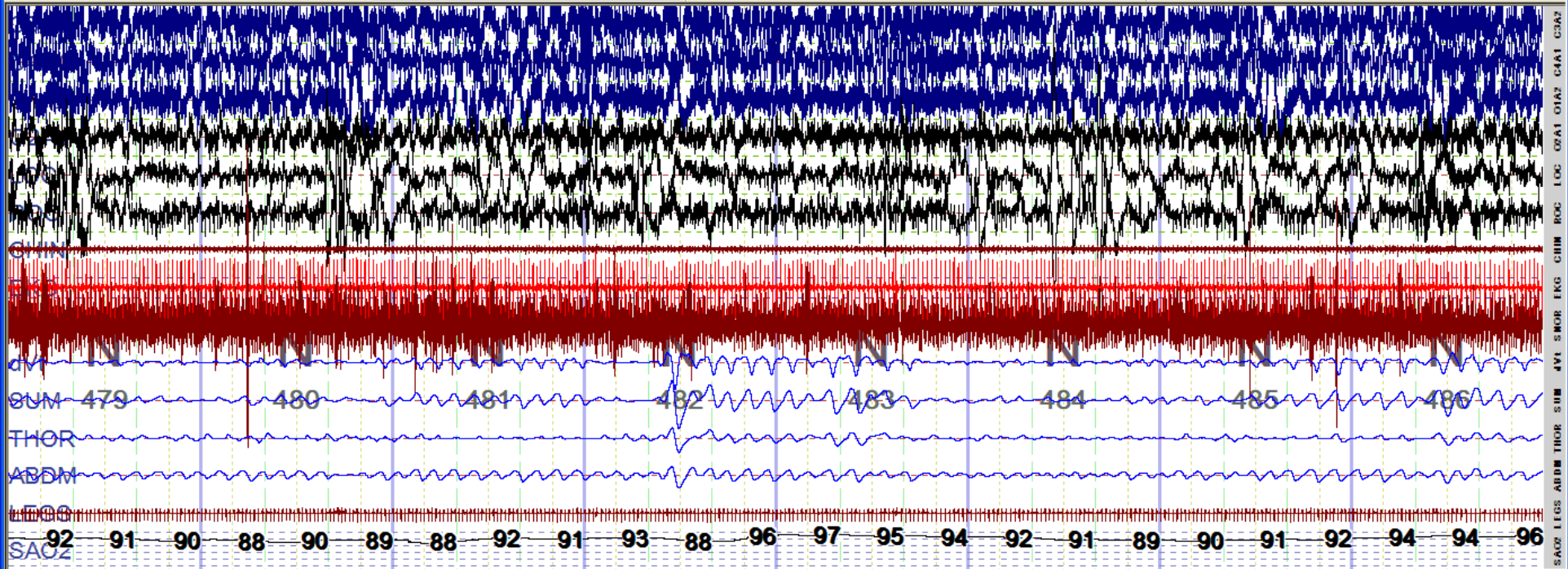
OSA's

- Obstructive Sleep Apnea

O2 CH MH OH CA MA OA SN PB CS Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2

N W 1 2 3 4 R M

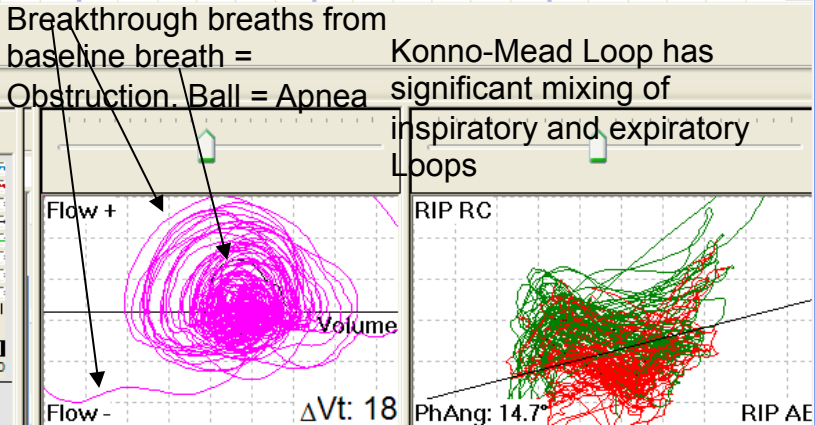
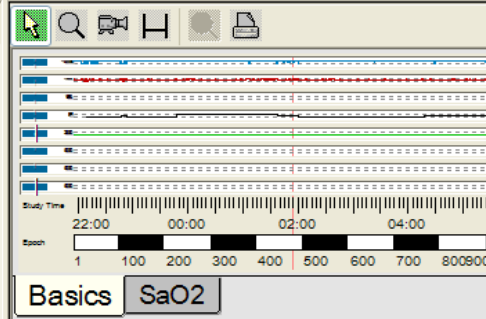
Post New



← ↔ → ↶ ↷ ↺ ↻ ⏪ ⏩ 🔍 🖨 📄

3:59:30 Tx 0.0/0.0/0.00 240

Epoch	Stage	SaO2	HR	Event1	BPos	Ep	Ev	Tech
475	N	89	97		L	0.0	0.0	
476	N	89	97		L	0.0	0.0	
477	N	88	97		L	0.0	0.0	
478	N	92	97		L	0.0	0.0	
479	N	88	100		L	0.0	0.0	
480	N	86	99		L	0.0	0.0	
481	N	85	102		L	0.0	0.0	
482	N	88	99		L	0.0	0.0	
483	N	94	99		L	0.0	0.0	
484	N	89	92		L	0.0	0.0	



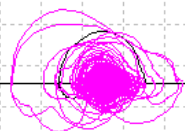
O2 CH MH OH CA MA OA SN \overline{P} \overline{C} \overline{S} Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2

N W 1 2 3 4 R M

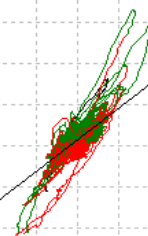
Post New

Flow +

RIP RC



Volume

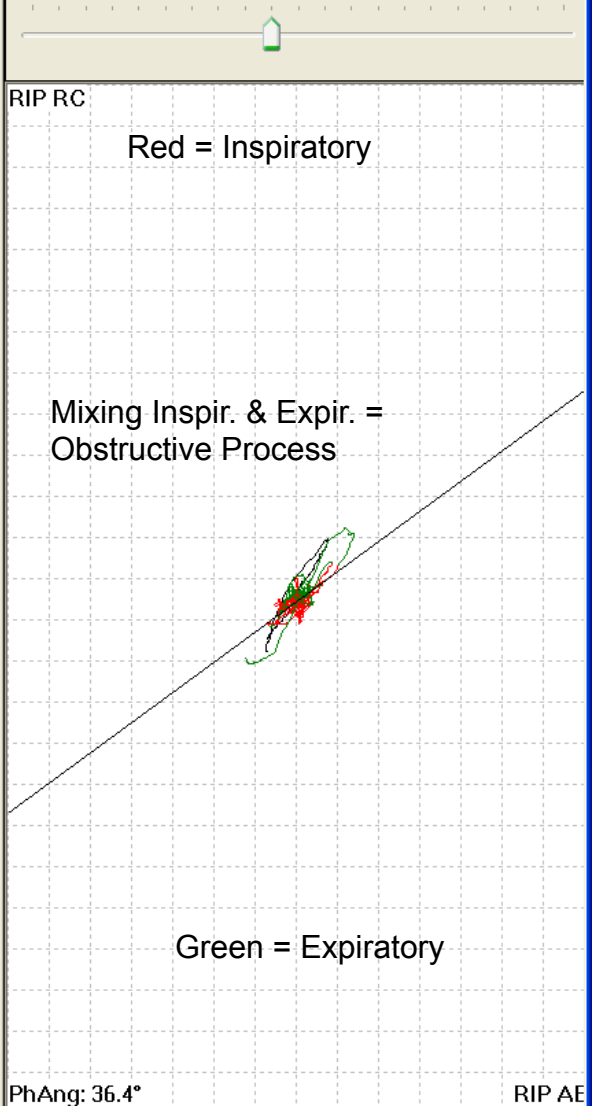
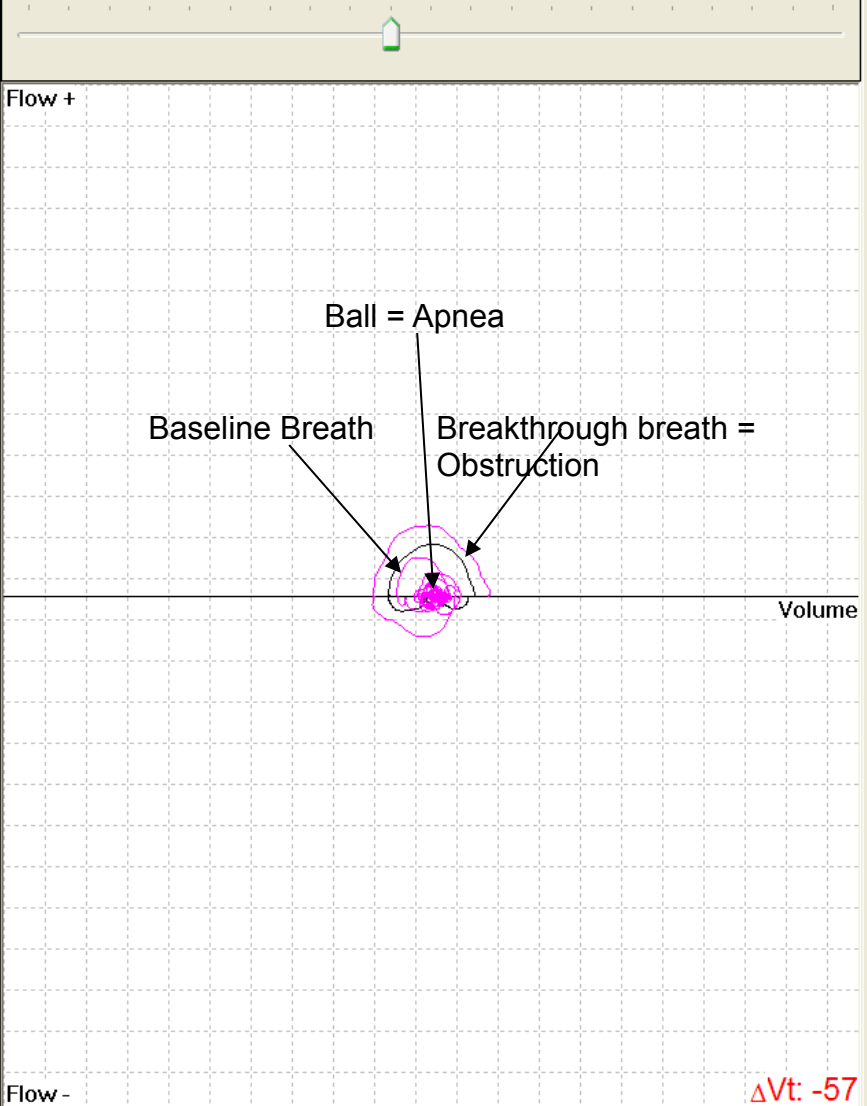


$\Delta V_t: -52$ PhAng: 37.6°

RIP AE

Epoch	Ep	Ev	Tech
954	N	9	
955	N	9	
956	N	9	
957	N	9	
958	N	9	
959	N	9	
960	N	9	
961	N	9	
962	N	9	
963	N	9	
964	N	9	
965	N	9	
966	N	9	
967	N	9	
968	N	9	
969	N	9	
970	N	9	
971	N	9	
972	N	9	
973	N	9	
974	N	9	
975	N	9	
976	N	9	
977	N	9	
978	N	9	
979	N	9	
980	N	9	
981	N	9	
982	N	9	
983	N	9	
984	N	9	
985	N	9	
986	N	9	
987	N	9	
988	N	9	
989	N	9	
990	N	9	
991	N	9	
992	N	9	

Breath	PitMif
7	2.34
8	2.06
1	2.04
2	1.86
3	2.12
4	1.79
5	1.95
6	2.21
7	1.91
1	1.58
2	1.94
3	2.12
4	2.46
5	2.31
6	2.78
7	2.32
1	2.38
2	2.06
3	2.29
4	2.55
5	3.06
6	2.37
7	1.65
8	1.62
1	2.02
2	2.22
3	2.75
4	2.61
5	2.30
6	2.10
7	2.36
8	1.83
9	2.51
1	2.52
2	2.12
3	2.63
4	2.63



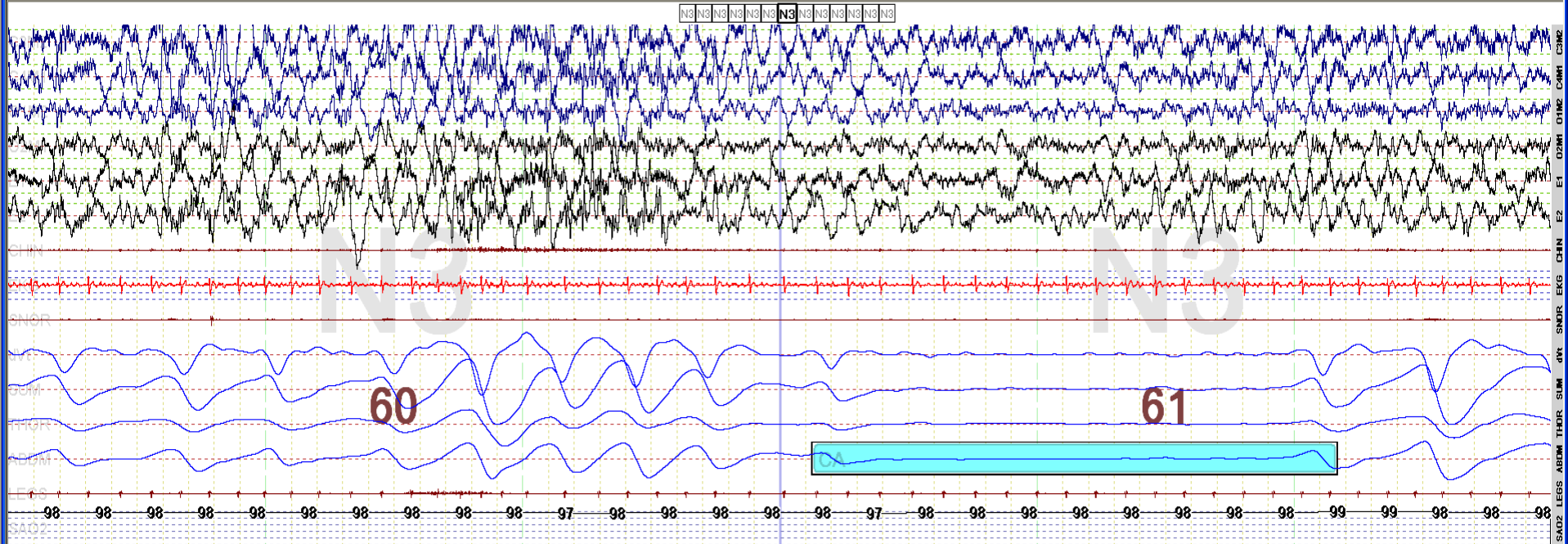
$\Delta Vt: -57$ PhAng: 36.4°

CSA's

- Central Sleep Apnea's

EEG, CHS/OSH

LM LMb LMw ALM EFM Bix T2D PA PV T Br ASY STC NCT WCT ATF UDA O2 CH MH OH CA MA OA Sh PB CS IVI Ar Aw pH F UD1 UD2



60

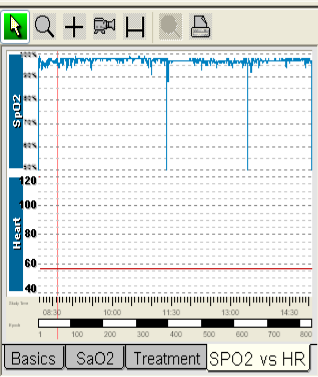
61



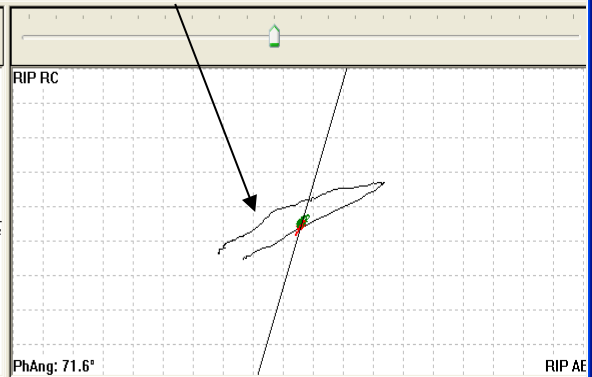
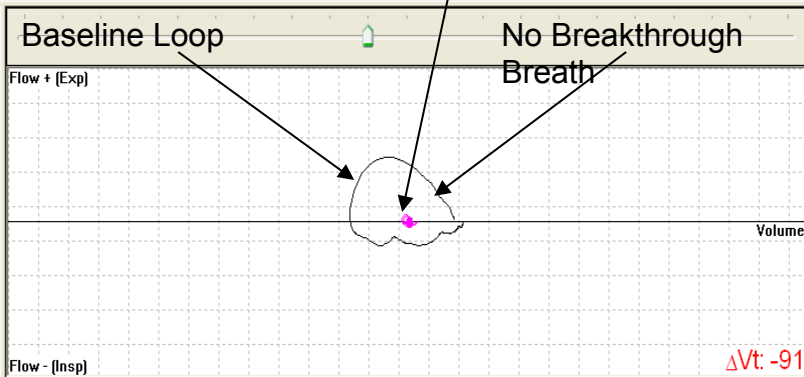
Central Apnea

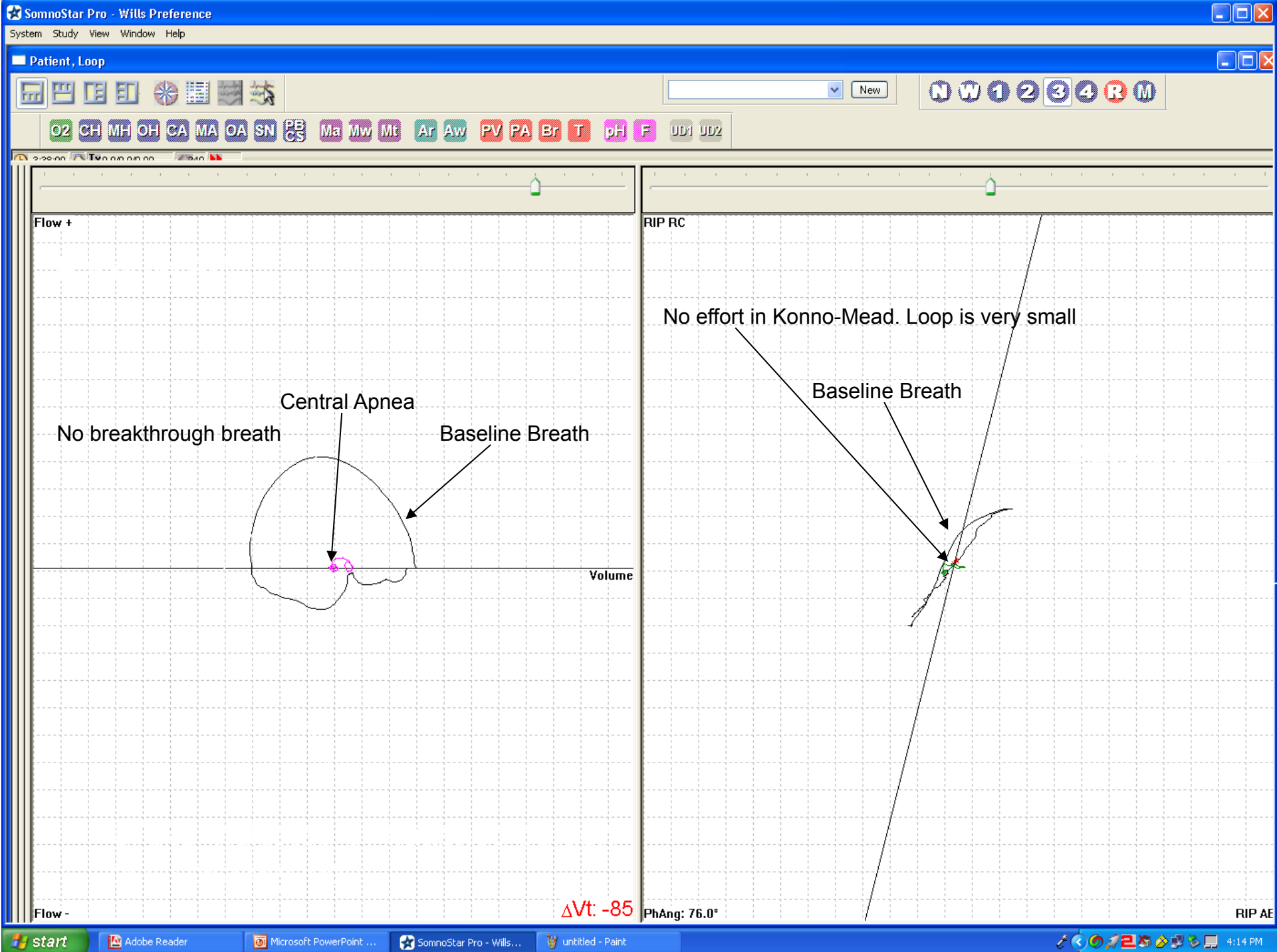
Baseline Loop

No effort = Central process



Epoch	Breath
60	1
60	2
60	3
60	4
60	5
60	6
60	7
60	8
61	1
61	2
61	3
61	4
61	5
61	6
62	1
62	2







O2 CH MH OH CA MA OA SN $\overline{P_{\text{ES}}}$ $\overline{P_{\text{CS}}}$ Ma Mw Mt Ar Aw PV PA Br T pH F UD1 UD2

N W 1 2 3 4 R M

Post

New

Flow +

Central Apnea
No Breakthrough breath.
Breath occurring stays well
within the baseline breath
Baseline Loop



Volume

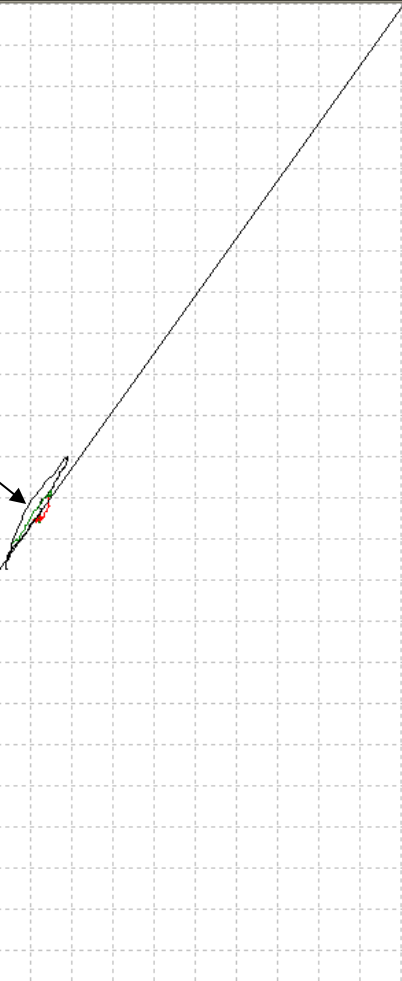
Flow -

$\Delta Vt: -71$

PhAng: 54.5°

RIP RC

Baseline Loop



RIP AE

Conclusion

- In a nutshell
- Ball with breakthrough breath = OSA
- Ball without breakthrough breath = CSA
- Donut with breakthrough breath = OSH
- Donut without breakthrough breath = CSH
- Flattened inspiratory loop = UARS