

# CHAMP

*Clinical Applicability*

# Clinical Utility

- Useful for identifying early stage cochlear hydrops.
- When used in combination with VEMPS, can be used to distinguish amongst
  - **Meniere's Disease with cochlear hydrops,**
  - **cochlear hydrops only, and**
  - **vestibular hydrops only.**
- Approximately 10 sites using CHAMP (several using SABR and calculating manually).

# Differences btw CHAMP & SABR

- Data collection techniques are the same.
- Noise and PAM are still issues.
- CHAMP is a much more robust measure.
- CHAMP includes both latency and amplitude measures, but does not use derived bands.

# Amplitude Measures

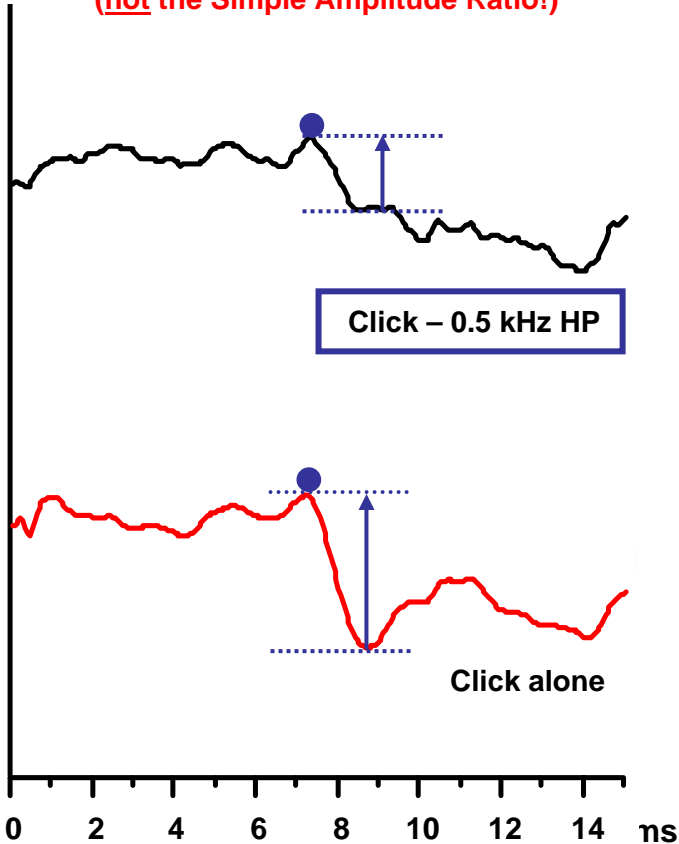
- Simple amplitude ratio
  - Ratio of undermasked wave  $V$  in 0.5 kHz high-pass noise masking condition to the click alone.
- New: Special amplitude ratio measure
  - Ratio of wave after subtracting the response in 0.5 kHz high-pass noise masking condition from click alone condition to the click alone condition.

# Special Amplitude Ratio Measure

## Meniere's Disease

**Amplitude Ratio = 0.48**

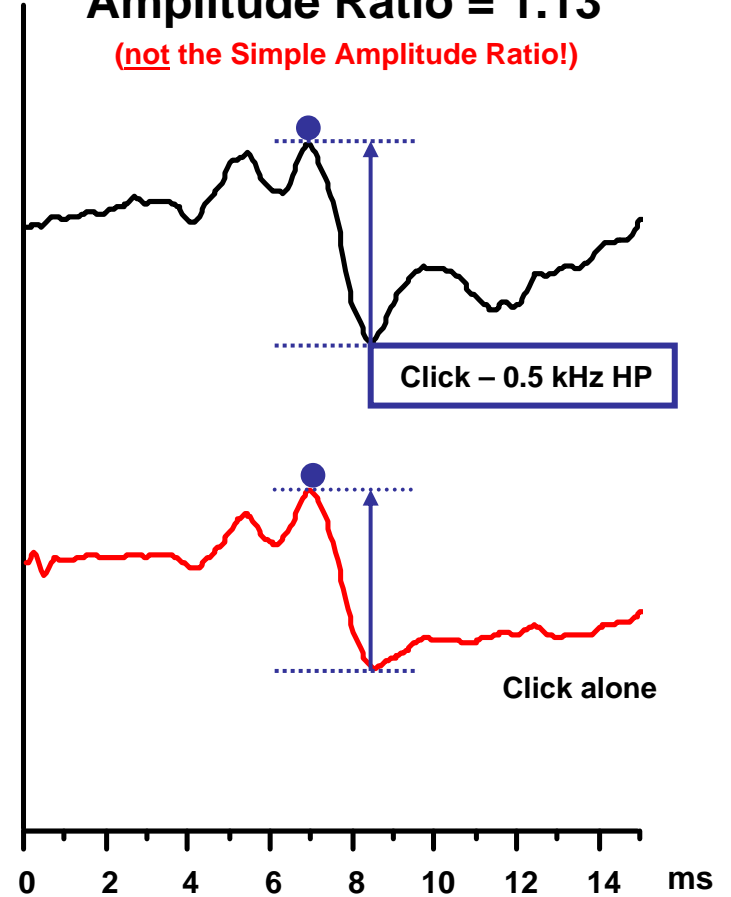
**(not the Simple Amplitude Ratio!)**



## Non - Meniere's Disease

**Amplitude Ratio = 1.13**

**(not the Simple Amplitude Ratio!)**





# Cases

# Case 1 Right Cochlear Hydrops

- 34 YO Female
- RE fluctuating hearing loss, tinnitus, aural fullness for 1 month.
- Began anti-oxident and diuretic treatments within 1 week of testing
- LE hearing WNL, RE mild to moderate HF SNHL

*Review CHAMP Analysis in AEP software.*

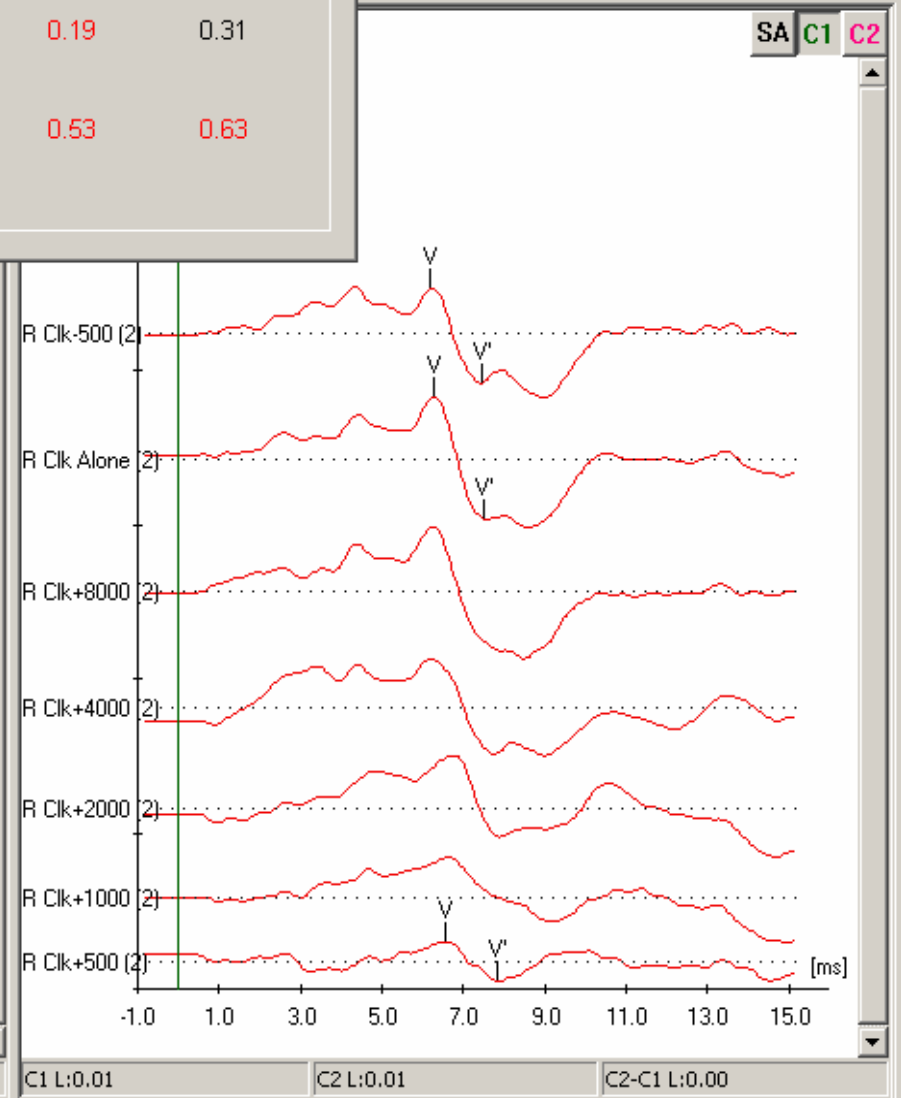
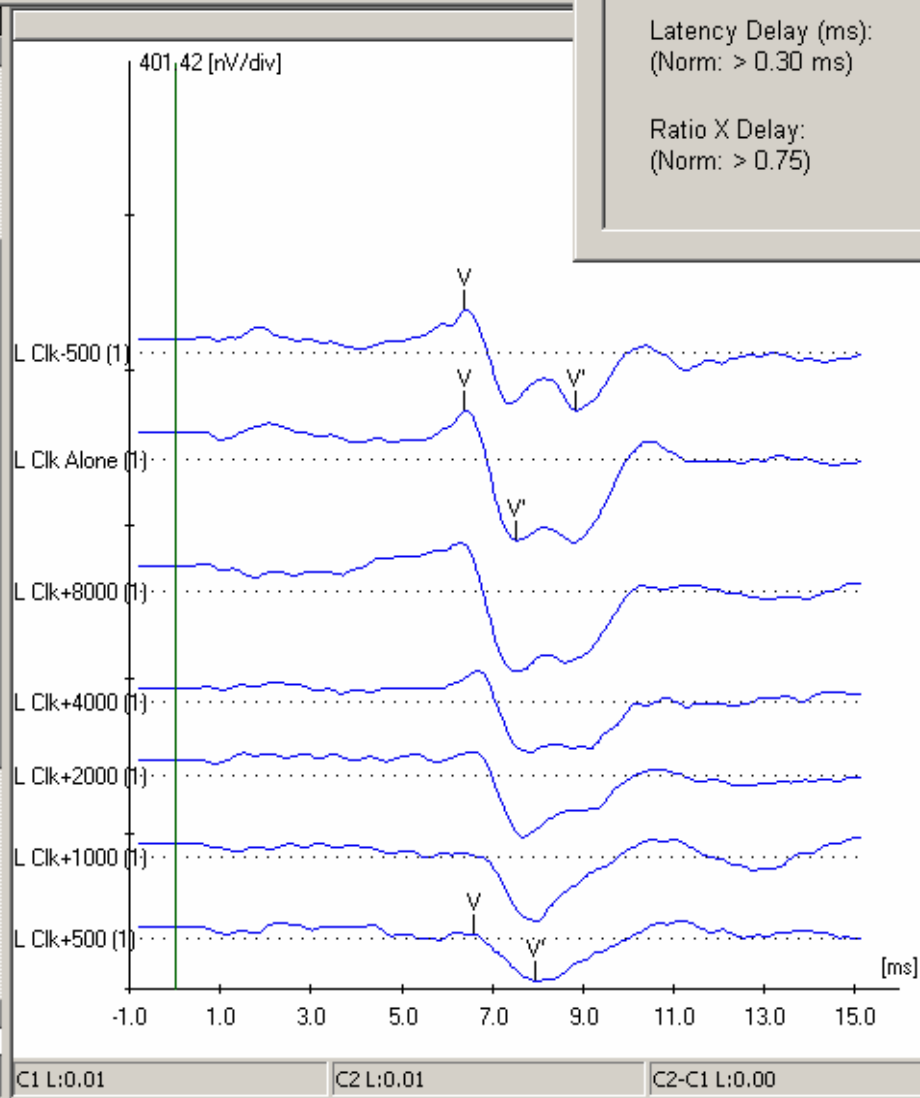
# Case 2- Bilateral Cochlear Hydrops

- 62 YO Female
- Decreased and fluctuant “muffled” hearing bilaterally
- Pure tone average is 28 dB HL in the right ear and 45 dB HL in the left ear
- Tinnitus
- Patient denies any vertigo, dizziness, or disequilibrium
- VEMP normal



**CHAMP Analysis**

Calculation	Left	Right
Latency Delay (ms): (Norm: > 0.30 ms)	0.19	0.31
Ratio X Delay: (Norm: > 0.75)	0.53	0.63



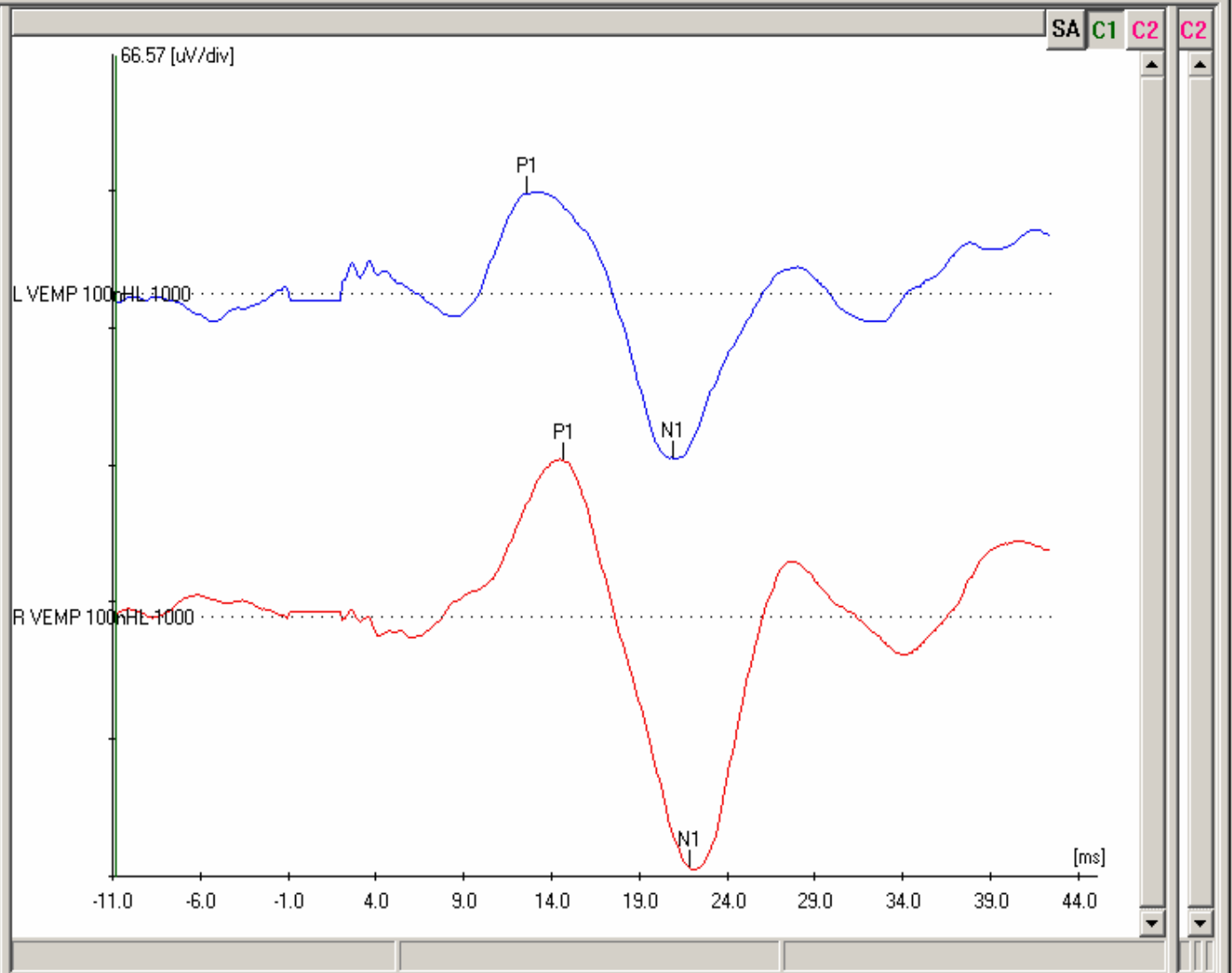
# Case 3- Early Vestibular Meniere's

- 46 YO Female
- Bilateral mild low-frequency SNHL
- Sudden onset of True Vertigo within 1 week of exam
- Visual disturbance and oscillopsia with fast head movements
- Fullness and pressure in her ears for many years which she has previously related to sinus infections
- Occasional tinnitus

AEP: ABR (1 Channel, 10.66 ms window)

DLR

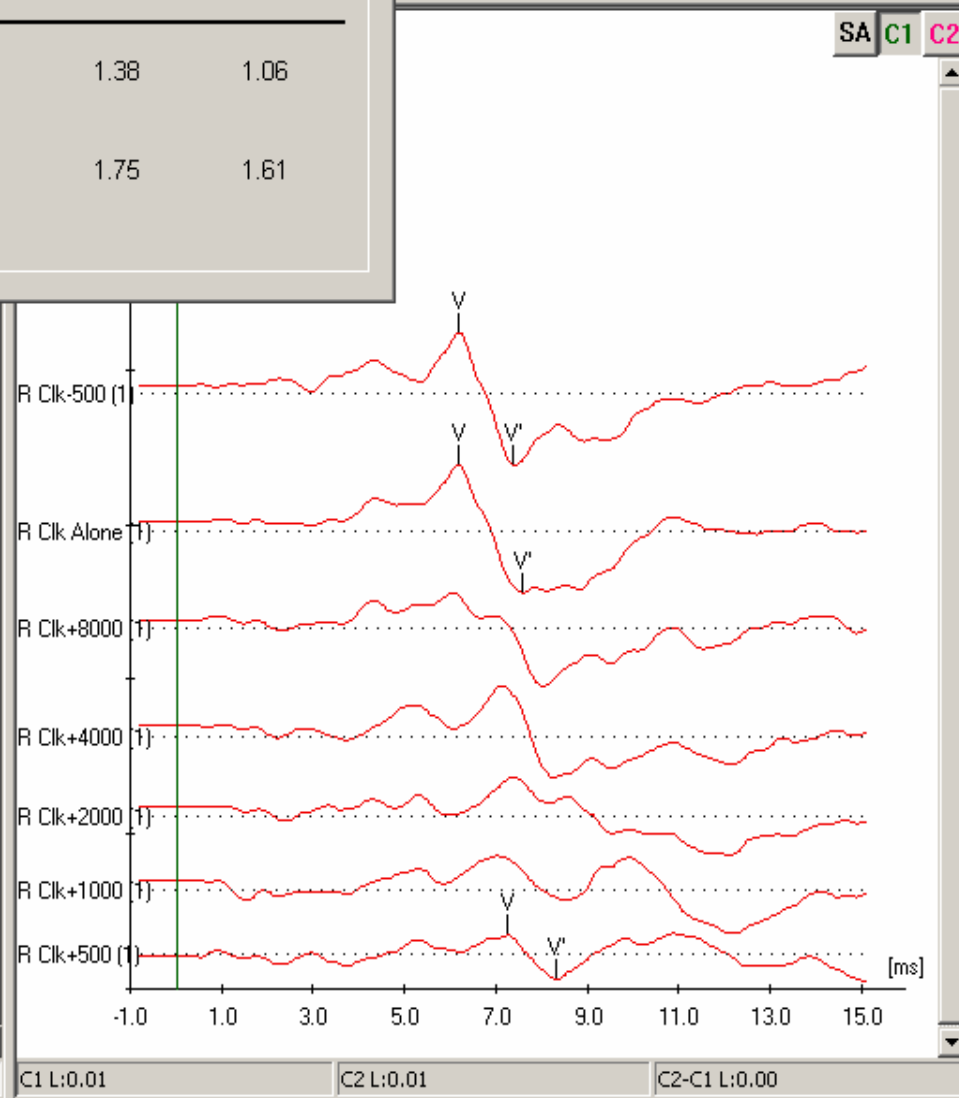
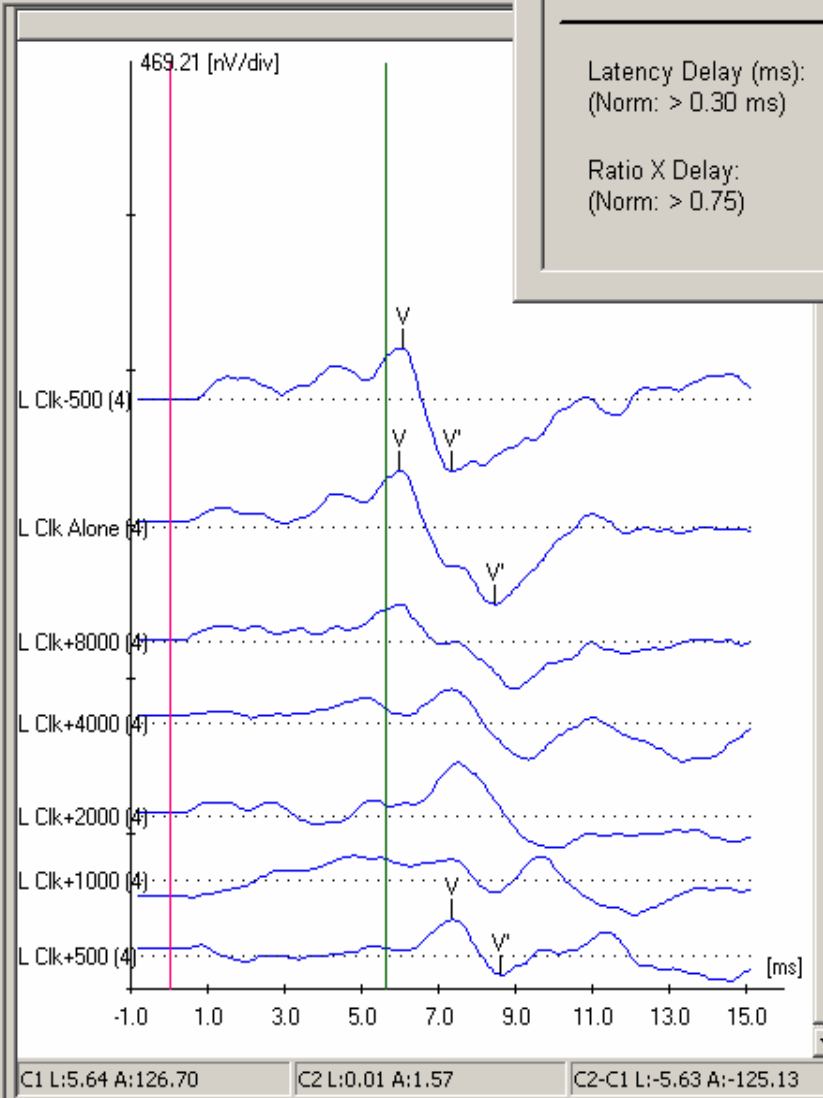
- Control Panel**
- 8/11/2005 11:15:06 AM
  - AEP
    - L** Left
      - 1000 Hz Insert
        - 70 dB nHL 4.3/s
        - Rare NoMask
        - 80 dB nHL 4.3/s
        - Rare NoMask
        - Rare NoMask
        - 100 dB nHL 4.3/s
          - Rare NoMask
        - Click Insert
          - 80 dB nHL 25.3/s
          - Rare NoMask
          - 80 dB nHL 35.5/s
          - Rare NoMask
          - 80 dB nHL 55.5/s
          - Rare NoMask
      - R** Right
        - Click Insert
          - 80 dB nHL 55.5/s
          - Rare NoMask
          - 80 dB nHL 35.5/s
          - Rare NoMask
          - 80 dB nHL 25.3/s
          - Rare NoMask
        - 1000 Hz Insert
          - 100 dB nHL 4.3/s
            - Rare NoMask



AEP: ABR (1 Channel, 10.66 ms window)

**CHAMP Analysis**

Calculation	Left	Right
Latency Delay (ms): (Norm: > 0.30 ms)	1.38	1.06
Ratio X Delay: (Norm: > 0.75)	1.75	1.61



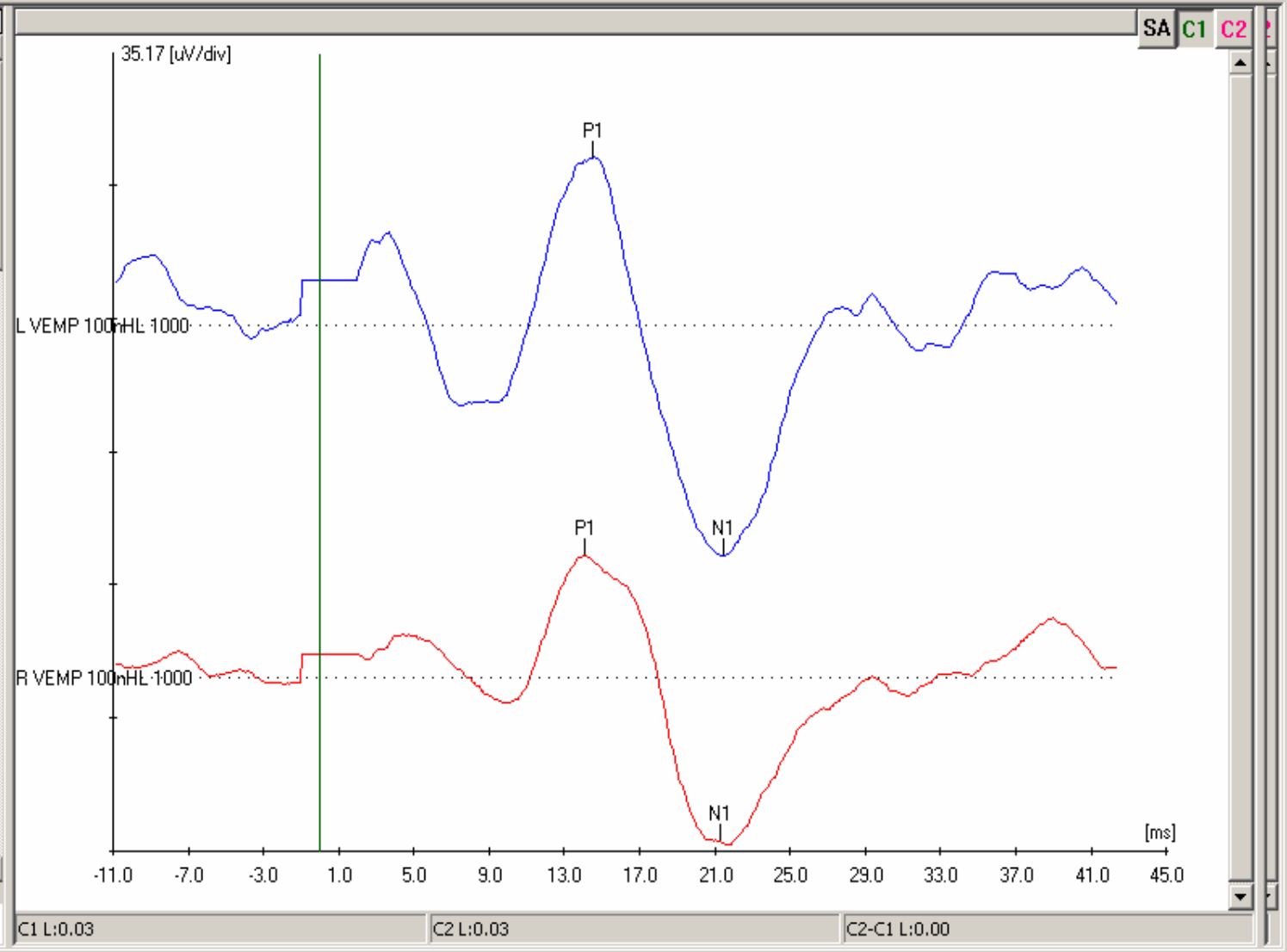


# Case 4- Cochlear Hydrops

- 46 YO Male
- Recurrent bilateral tinnitus, aural fullness, dizziness, and lightheadedness
- Hyperacusis
- Bilateral Mild SNHL

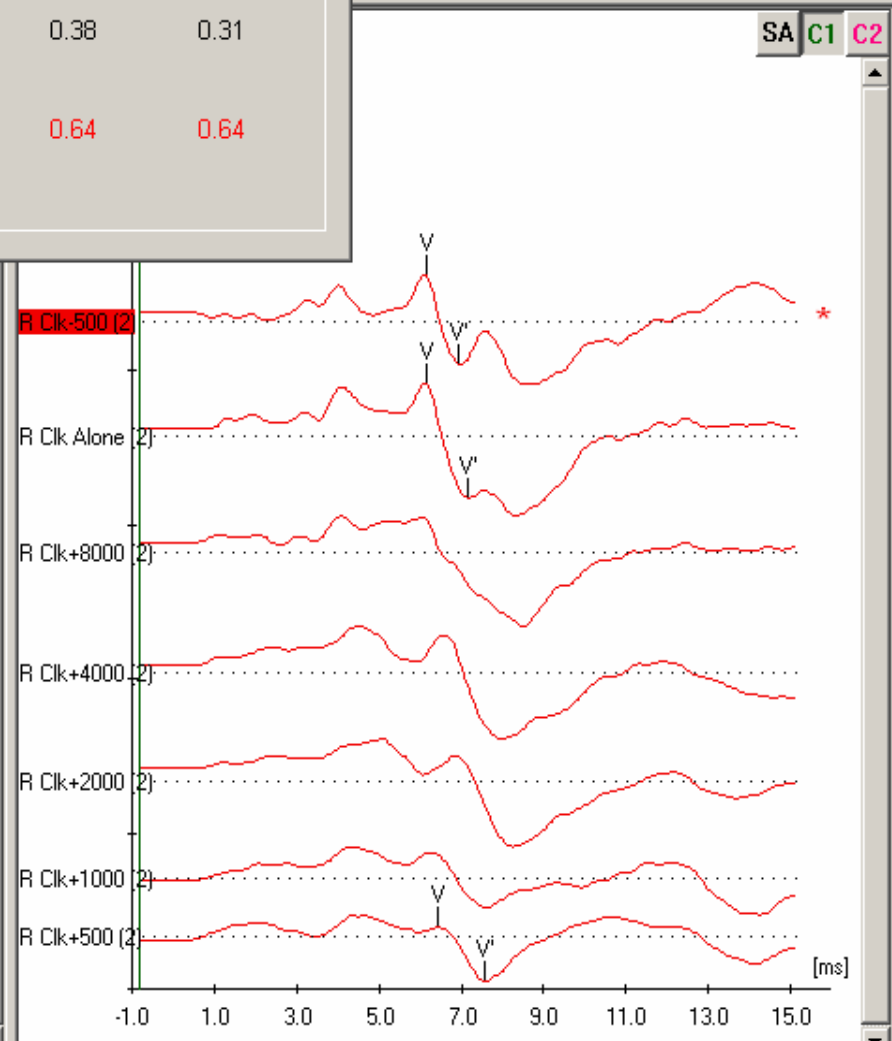
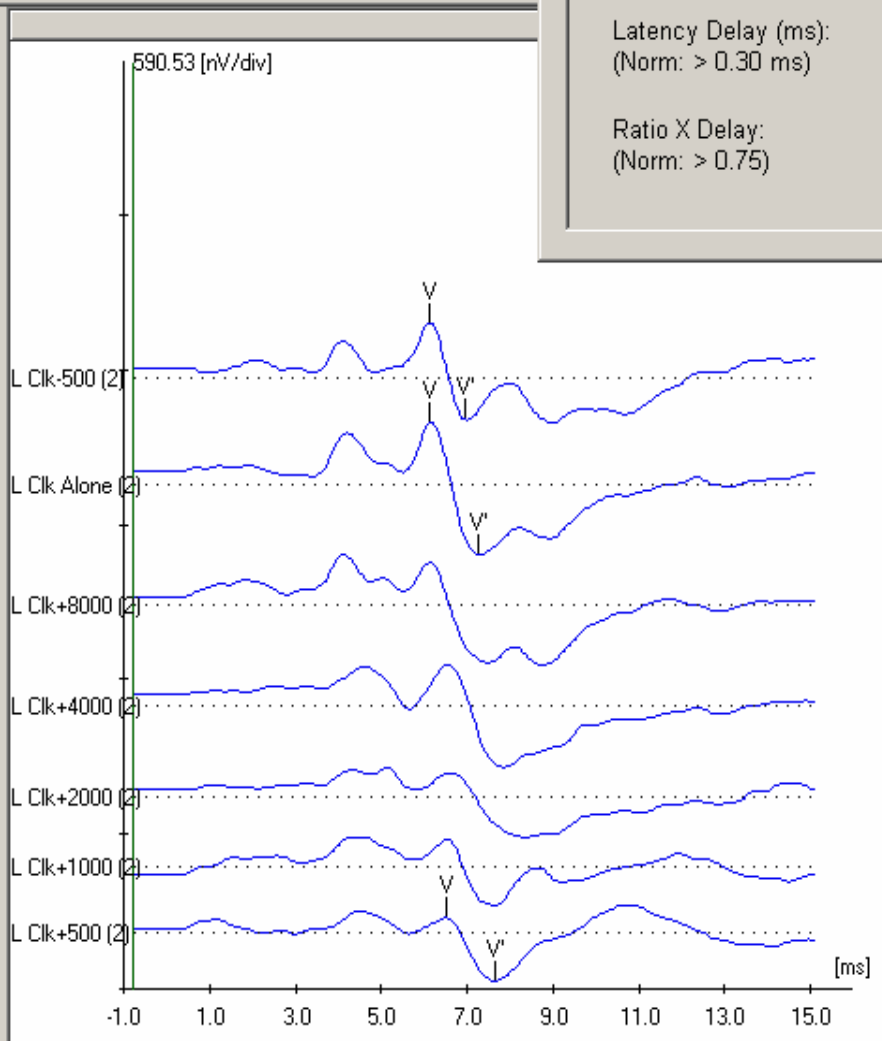
AEP: ABR (1 Channel, 10.66 ms window) [Off] [DLR]

- Control Panel**
- 9/12/2005 11:21:19 AM
    - AEP
      - L** Left
        - 1000 Hz Insert
          - 100 dB nHL 4.3
            - Rare NoMask
              - 80 dB nHL 4.3/
              - Rare NoMask
        - R** Right
          - 1000 Hz Insert
            - 100 dB nHL 4.3
              - Rare NoMask
                - 80 dB nHL 4.3/
                - Rare NoMask
    - 9/26/2005 10:56:10 AM
      - AEP
      - SABR/CHAMP
        - L** Left
          - Collected Data
            - BB Clk Alone BE
              - Fsp 47.41 Noi
            - BB Clk+8000 BE
              - Fsp 39.03 Noi
            - BB Clk+4000 BE
              - Fsp 33.06 Noi
            - BB Clk+2000 BE
              - Fsp 17.51 Noi
            - BB Clk+1000 BE



**CHAMP Analysis**

Calculation	Left	Right
Latency Delay (ms): (Norm: > 0.30 ms)	0.38	0.31
Ratio X Delay: (Norm: > 0.75)	0.64	0.64



# Case 5- LE Cochlear Hydrops

- 25 YO Male
- Recurrent LE fluctuating hearing loss, tinnitus, Aural Fullness
- Slight SNHL in LE, WNL in RE
- Denies Dizziness or vertigo



### CHAMP Analysis

Calculation	Left	Right
Latency Delay (ms): (Norm: > 0.30 ms)	0.38	0.44
Ratio X Delay: (Norm: > 0.75)	0.69	0.90

