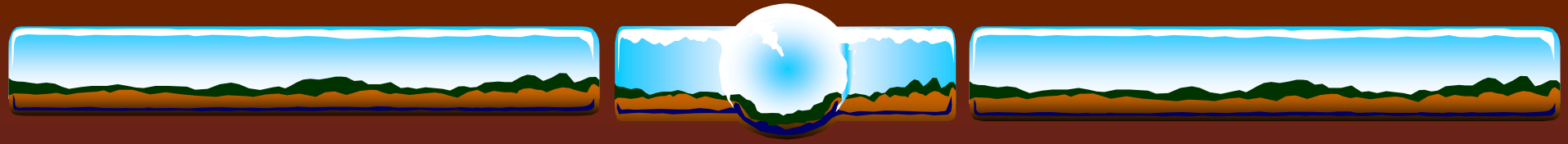
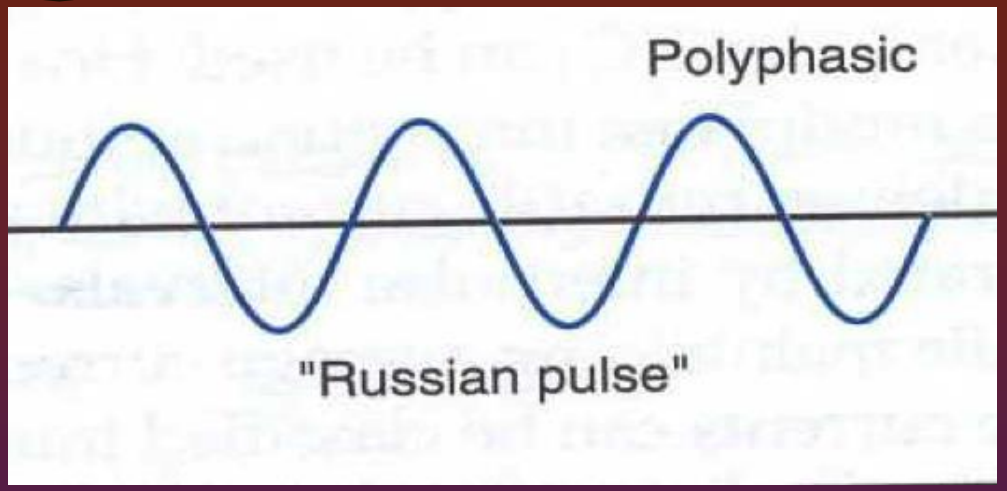


RUSSIAN CURRENTS

RUSSIAN CURRENTS

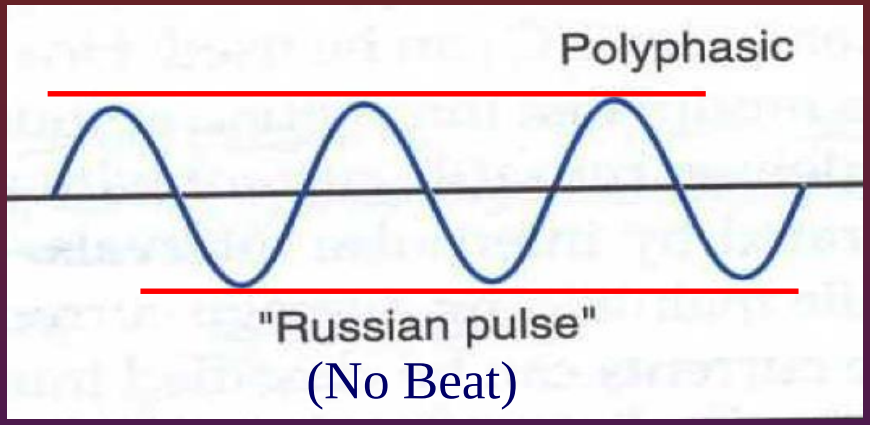
- This current was invented by a Russian scientist Dr Yakov Kots in1976
- The currents were used on Russian Athletes in 1980 Moscow Olympics
- “Russian currents” have been advocated for use in increasing muscle force

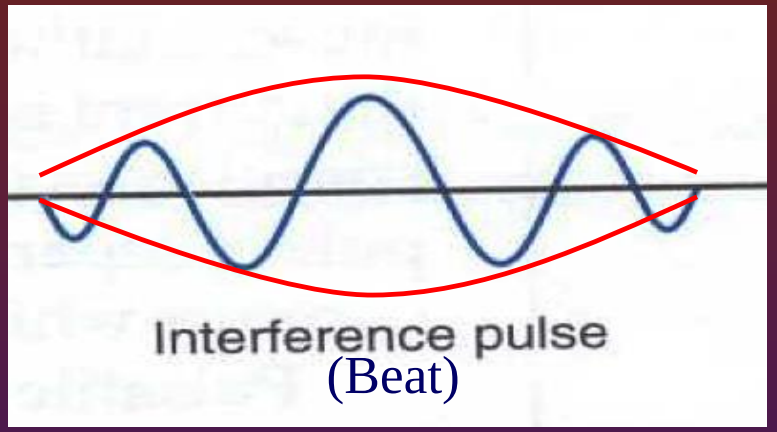


Russian Currents

- Russian Current is a Medium Frequency Current
  The Frequency used is 2.5KHz (2500Hz)
- Waveform: Polyphasic sinusoidal waveform
- Current Amplitude: The maximum current is 100mA
- Clinically used at 70mA.

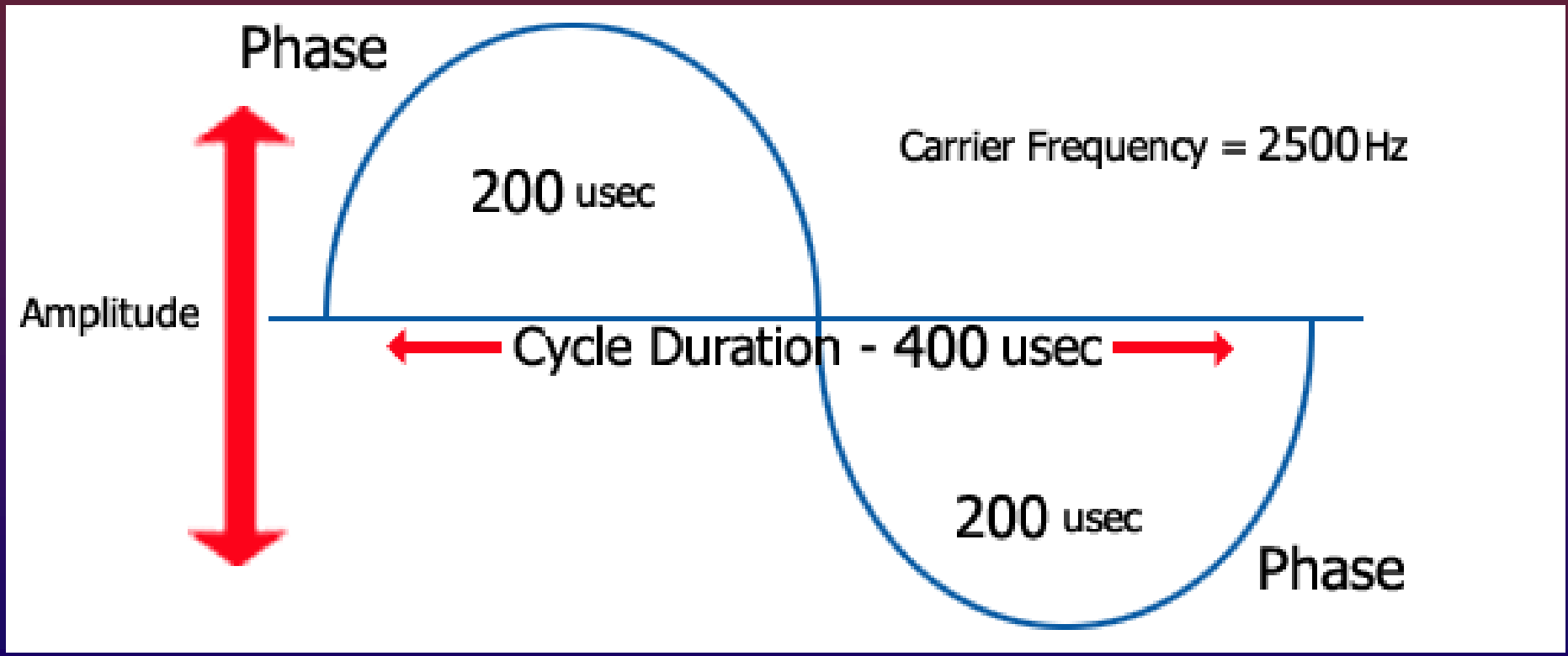
Difference between Russian & IFT

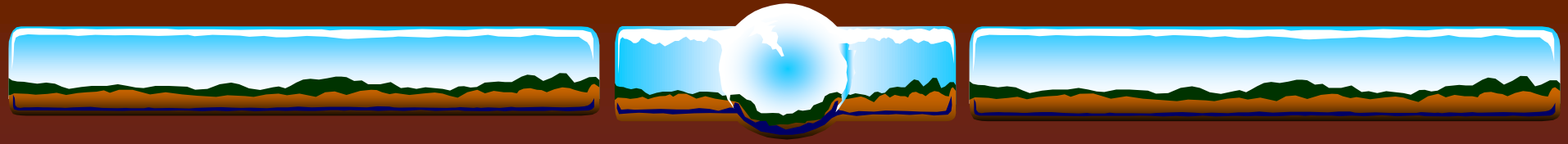




- IFT is also another Medium Frequency current, but in that two medium frequency currents are superimposed, to get beat frequency which in low frequency in nature
- In Russian currents, Only one Medium frequency current (No superposition so no beat)

Russian Current
Pulse and Phase durations





Calculating Pulse and Phase duration

- 2500 Hz in 1 second
- 1 second = 1000 ms (Milliseconds)
- 1 Millisecond = 1000us (Microseconds)
- 1 second = 1000000us

- So 2500 Hz in 1000000us
- So 1 Hz (1 cycle) = 400 us
- 1 cycle = 2 phases
- So duration of 1 phase = 200 us
  (Now check the previous slide)

Application of Russian currents

- Russian currents applied for increasing muscle force (specially in sports persons)

- The treatment regimen is known as “10/50/10”
- Means, “10 seconds of stimulation followed by 50 seconds rest, and this is repeated for 10 minutes”
- Frequency of treatment is once daily, for 3 to 6 months

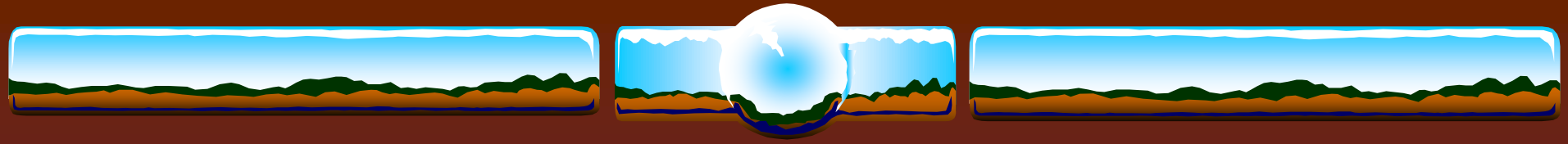
Principle of Russian Currents

- In a Normal Voluntary muscle contraction – **“Asynchronous motor unit recruitment”** takes place.
- Means not all the motor units are recruited at once, even if the resistance is maximum
- Some motor units are reserved and used when the other motor units fatigue.
- This resting and using of motor units takes place in a cyclical manner and it is a normal physiological function.

Principle of Russian Currents (Contd.)

- In an Electrically stimulated muscle contraction – **"Synchronous motor unit recruitment"** take place.
- Means all the motor units under the electrodes are recruited
- Dr Kotz hypothesized that Application of Electrical Stimulation along with Voluntary muscle contraction will result in maximum motor unit recruitment (which otherwise is not possible even with maximum resistance/effort)
- This should help in increasing the Muscle Strength

- Kots is reported to have advocated a stimulus regimen for increasing muscle force that he claimed was able to
- increase the maximum voluntary contraction (MVC) of elite athletes by up to 40%.
- Unfortunately, the only details of Kots' work were brief conference notes, translated from Russian and not readily accessible
-



- So again lack of literature
- Also the current was introduced during the peak of cold war (between American & Russian)
- So much so that the currents were called as Russian, not by any other name

- Frequently used in Europe and Russia but not in English speaking countries