

DIGITIZING RECORDS

THE ART OF CLEANING RECORDS AND
CONVERTING FROM ANALOG TO DIGITAL

FOR SQUARE AND ROUND DANCE CALLERS

www.DickOtis.com

Dick.Otis@me.com

OUTLINE

- TURN-TABLE SELECTION
- Option One USB Digital Turntable
- Option Two Analog Turntable converted to Digital
- SOUND EDITORS
- AUDACITY SOFTWARE DOWNLOAD & INSTALL
- AUDIO FILE FORMATS
- BIT RATES
- CONFIGURING AUDACITY
- RECORD PREPARATION
- RECORDING
- AUDIO FILE CLEANUP
- QUESTIONS

TURN-TABLE SELECTION

OPTION 1 – USB TURNTABLE

- You can record audio from a USB turn-table directly into your computer
- Here is everything you need to know about USB turn-tables
 - <https://tinyurl.com/usb-turntable-comparison>
 - A comparison chart lists 20 USB turntables with anti-skid & a ceramic cartridge
 - USB Turntables cost between \$115 to \$630 (plus two at \$3000 & \$5000)
 - For our task an acceptable USB turn-table in the \$150 - \$250 range
- Ceramic cartridges have three basic problems: Increased distortion, poor equalization and accelerated record wear
 - [Ion Audio](#) & [Audio-Technica](#) have a moving magnet cartridge & built-in pre-amp
- Ion Audio is a leader in USB turntables -
 - I use the discontinued Ion TTUSB – still available on Amazon ~ \$80.00
- Audio-Technica AT-LP120XUSB-SV Direct Drive
 - If I had to start over again - \$250 Home Depot, Best Buy



Counter Weight & Scale Ring

Anti-Skate Adjustment

Replaceable Cartridge



TURNTABLE SELECTION

OPTION 2 – ANALOG

- All USB turntables pale in comparison to higher-end analog turntables
- Analog turntable run \$250 and up - plus a interface
 - Good option if you already have an analog turntable
- Audio-Technica ATLP140XPSV - \$400 Sweetwater
- Technics SL-1200MK7 Direct-Drive Professional - \$1000 Guitar Center
- Phono Preamps run \$30 and up
 - ART DJ PRE II Phono Preamp - \$65 Sweetwater, Amazon
 - ART USB Phono Plus Preamp + \$100 Sweetwater, Amazon
- USB turntables are easier to use but,
Any audiophile would be embarrassed to admit using a USB turntable as there are no high-end model

USB Phono Plus – Project Series





GRACO

LIBERTY

pitch
33 45 78

Dual
1229

strobe

start

stop

7

10

12

SOUND EDITORS

LOTS OF CHOICES

- For this talk I am using Audacity (free) - Mac/PC
- MAC Only
 - Apple Logic Pro - \$200 very best - much more than you need however
 - TwistedWave Mac \$ 80
 - Amadaus Pro - \$60 one click audio repair - used by A&S Records
 - Fission - \$30
- PC/MAC
 - WaveLab Pro - \$508, WaveLab Elements - \$100
 - Acoustica Standard \$60, Premium \$200
 - Sound Forge Audio Studio \$60 – single track editor
 - Oceanaudio – free, audacity like

AUDACITY DOWNLOAD

- Download Audacity for Mac or PC from
 - www.foosshub.com/Audacity.html
 - MAC ver 2.4.1
 - PC ver 2.4.1
- Features
 - Record from mic, mixer, turntable
 - Advance editing (cut, paste, delete, Undo, Redo)
 - Digital effects (change the pitch, tempo, remove background noise, remove vocals (sort of), create voice-overs)
 - Import/export of WAV, AIFF, AU, FLAC, MP3

AUDIO FILE FORMATS

- **WAV - Waveform Audio File Format**
 - Square Dance Record ~ 40MB
 - Microsoft Windows systems for raw and uncompressed audio
- **AIFF – Audio Interchange File Format**
 - Apple Computer systems for raw and uncompressed audio
- **MP3 - universal coding format for digital audio**
 - Square Dance Record ~ 4-6 MB
 - A lossy data-compression to encode data using the partial discarding of data with a large reduction in file size
- **WMA - Windows Media Audio, proprietary format**
 - Used by Windows Media Player
 - Compatible to MP3
- **M4A - (MPEG4) a successor to MP3**
 - Used for iTunes, Quicktime, Windows Media Player
 - Sounds better than MP3 when recorded at same bit rate*

BIT RATES

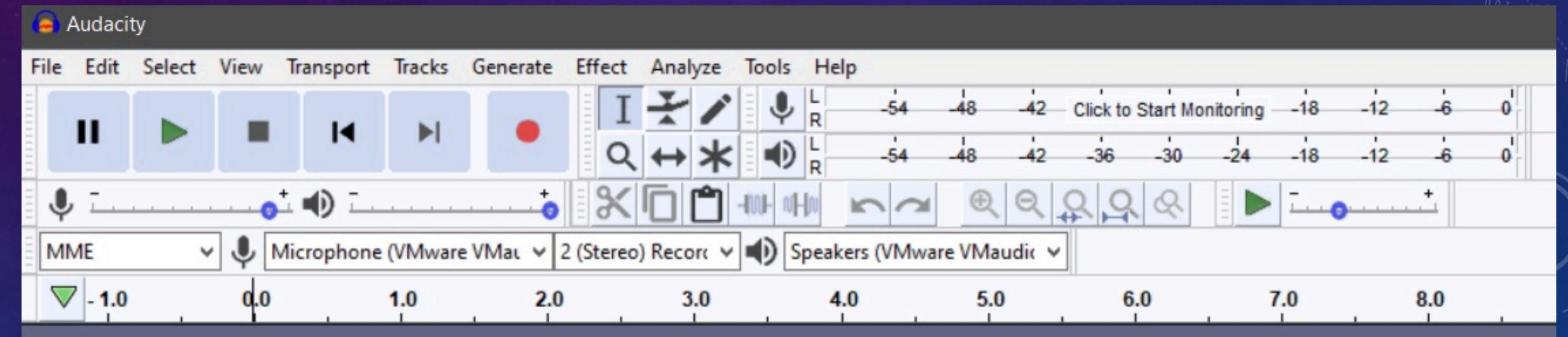
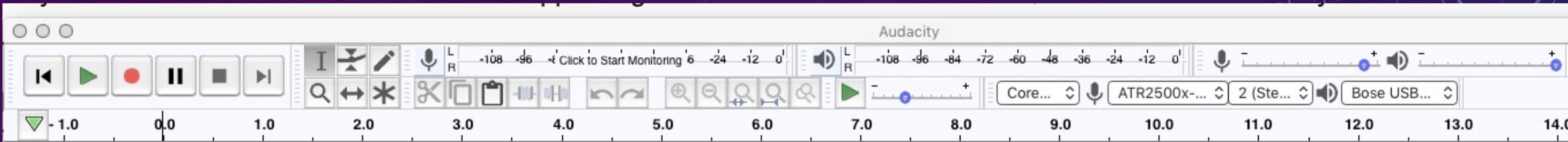
- Set the Bit Rate when you save the Audacity Audio File to MP3
 - Bit rates range from 96 to 320 kilobits per second (Kbps)
 - A bit rate of 128 Kbps is a sound quality equivalent to radio
 - A bit rate of 160 Kbps is a sound quality equivalent to a CD
 - Use an Audacity bit rate of 192 Kbps for square dance records
 - Difference quality between 192 and 320 is virtually indistinguishable but 320 produces a file size twice as big

CONFIGURING AUDACITY

- Before starting Audacity
- Use Settings (PC) or System Preferences (Mac) to:
 - Select your sound input to USB
 - Select your output audio
 - Caution: Failure to select computer settings for input/output first may make them unavailable in Audacity

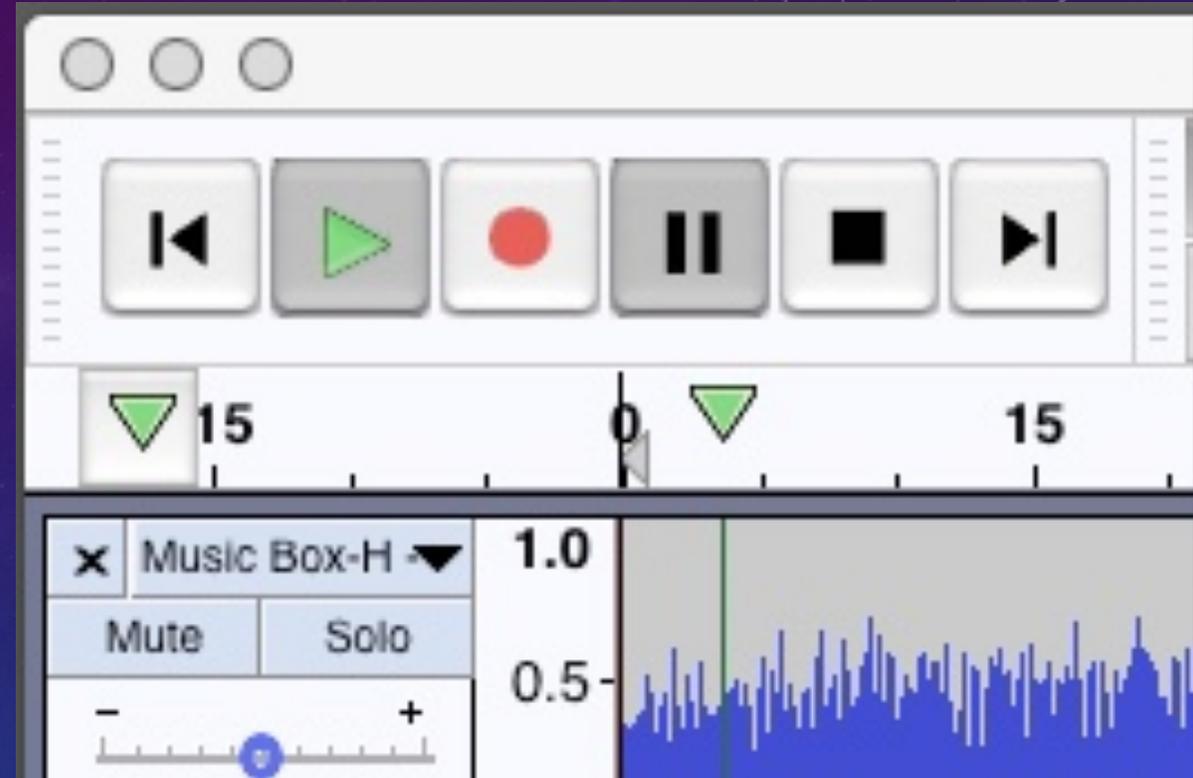
WORKING AUDACITY CONTROLS

MAC / PC – SAME CONTROLS DIFFERENT FORMAT



WORKING AUDACITY CONTROLS

- Red Record Button (circle)
- Black Stop Button (box)
- Green Play Button (triangle) or press space bar to start/stop
 - Stop repositions the cursor to initial start location
- Black Pause Button (railroad track)
 - Pause stops, then restarts from the stopped position.
- Green Triangle moves along top indication playback/time position



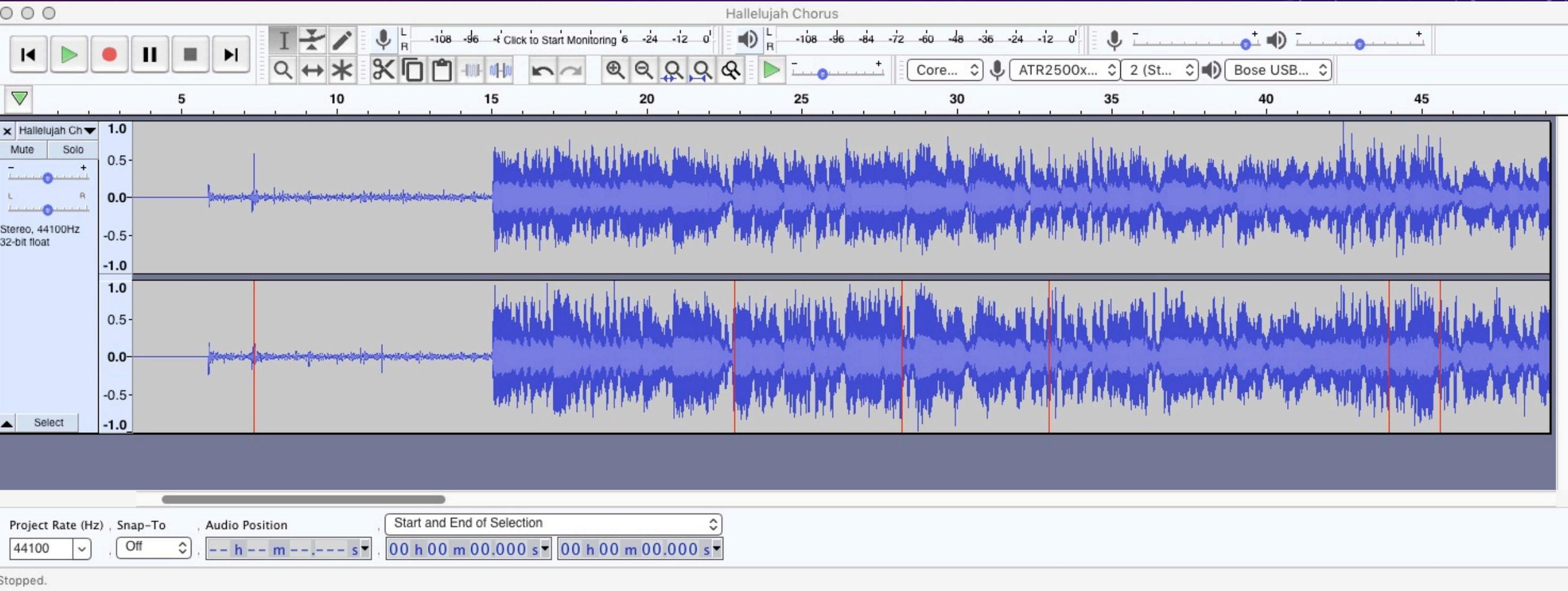
WORKING AUDACITY CONTROLS CON'T

- Configure Audacity controls - real time example
 - Microphone Input set to USB Audio
 - Speaker Output selection (in my case Bose USB Audio or AE2 Sound-link)
 - 2 channel stereo recording
 - Mic and Speaker Output Volume 100% (default)
 - Project Rate 44100 Hz (default)
 - Preferences/System Setting: Playback - s/w playthrough of input
 - Leave other preferences as default

RECORDING IN AUDACITY

- Do a test Recording to assess the condition of the record waveform
- Clean Record Sample: 50 year old 33 RPM “Hallelujah”
- Okie From Muskogee - K 1100 - a dirty record sample
 - If necessary, clean record with warm, soapy water, rinse, blow dry
- Okie From Muskogee - K 1100 after washing
- Okie From Muskogee - RYL 0624 – Royal Platinum baseline sample
- Okie From Muskogee - K 1100 after processing in Audacity

CLEAN RECORD SAMPLE 50 YEAR OLD 33 RPM "HALLELUJAH"



DIRTY RECORD SAMPLE

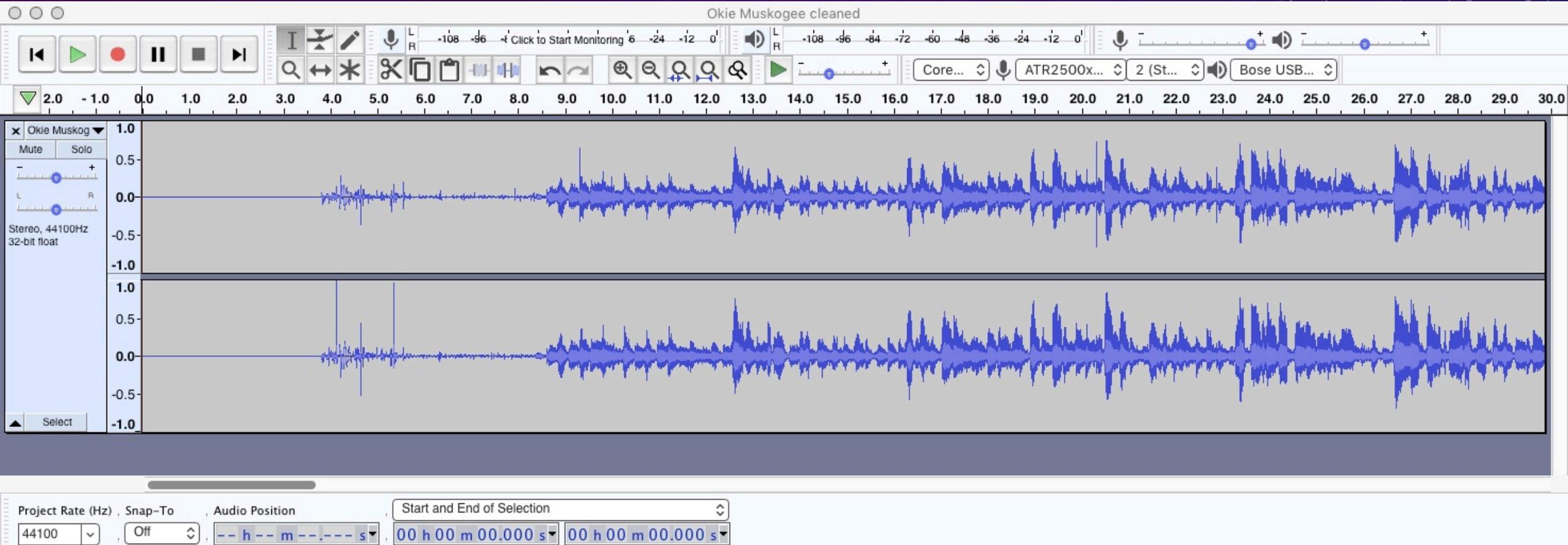
OKIE FROM MUSKOGEE - K 1100

The screenshot displays a DAW interface with the following elements:

- Transport and Tools:** Playback controls (stop, play, record, pause, solo, mute) and editing tools (select, copy, paste, delete, zoom, pan) are visible at the top.
- Timeline:** A horizontal timeline at the top shows time markers from 0 to 1:05 in 5-second increments.
- Audio Track:** The main area features two stacked stereo channels for 'Okie Muskogee dirty'. The top channel is labeled 'Okie Muskog' and includes 'Mute' and 'Solo' buttons. The waveform is blue and shows a complex, noisy signal. The bottom channel is a duplicate of the top one. The vertical axis for both channels ranges from -1.0 to 1.0.
- Metadata:** The track is identified as 'Stereo, 44100Hz, 32-bit float'.
- Control Panel:** At the bottom, the 'Project Rate (Hz)' is set to 44100, 'Snap-To' is 'Off', and the 'Audio Position' is 00 h 00 m 07.092 s. The 'Start and End of Selection' fields are also set to 00 h 00 m 07.092 s.
- Status:** The bottom left corner indicates the audio is 'Stopped'.

AFTER WASHING

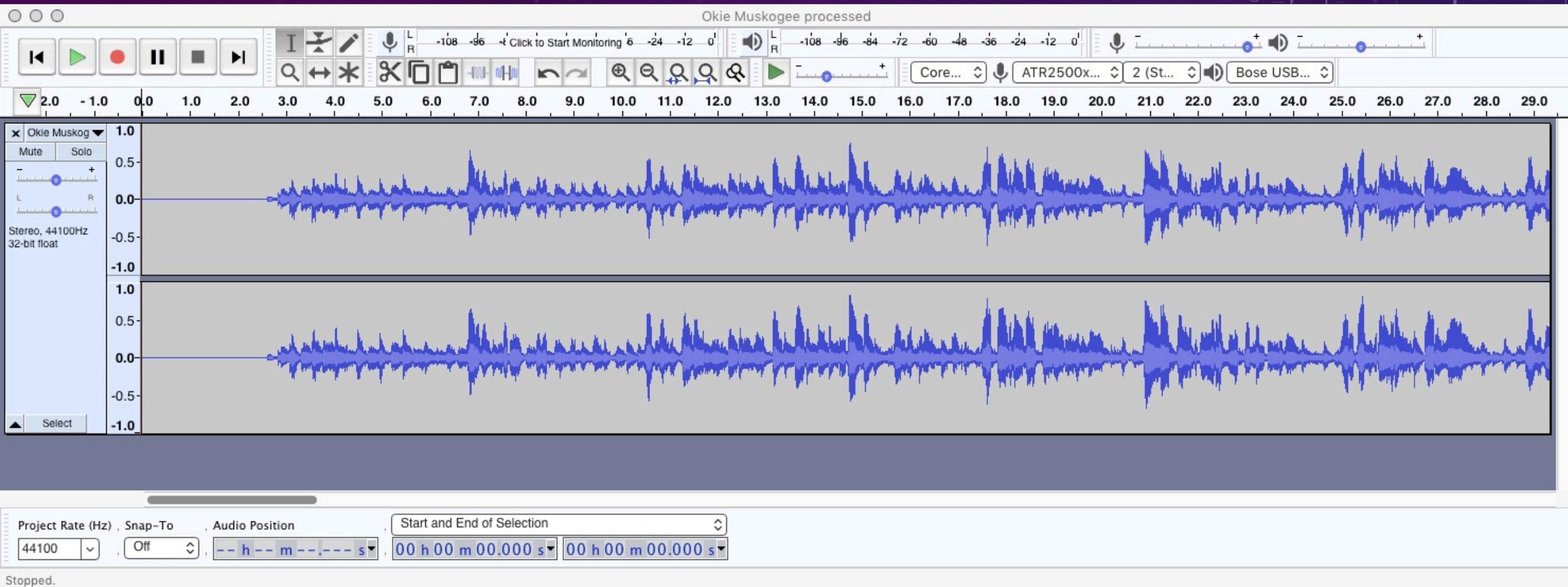
OKIE FROM MUSKOGEE - K 1100



Stopped.

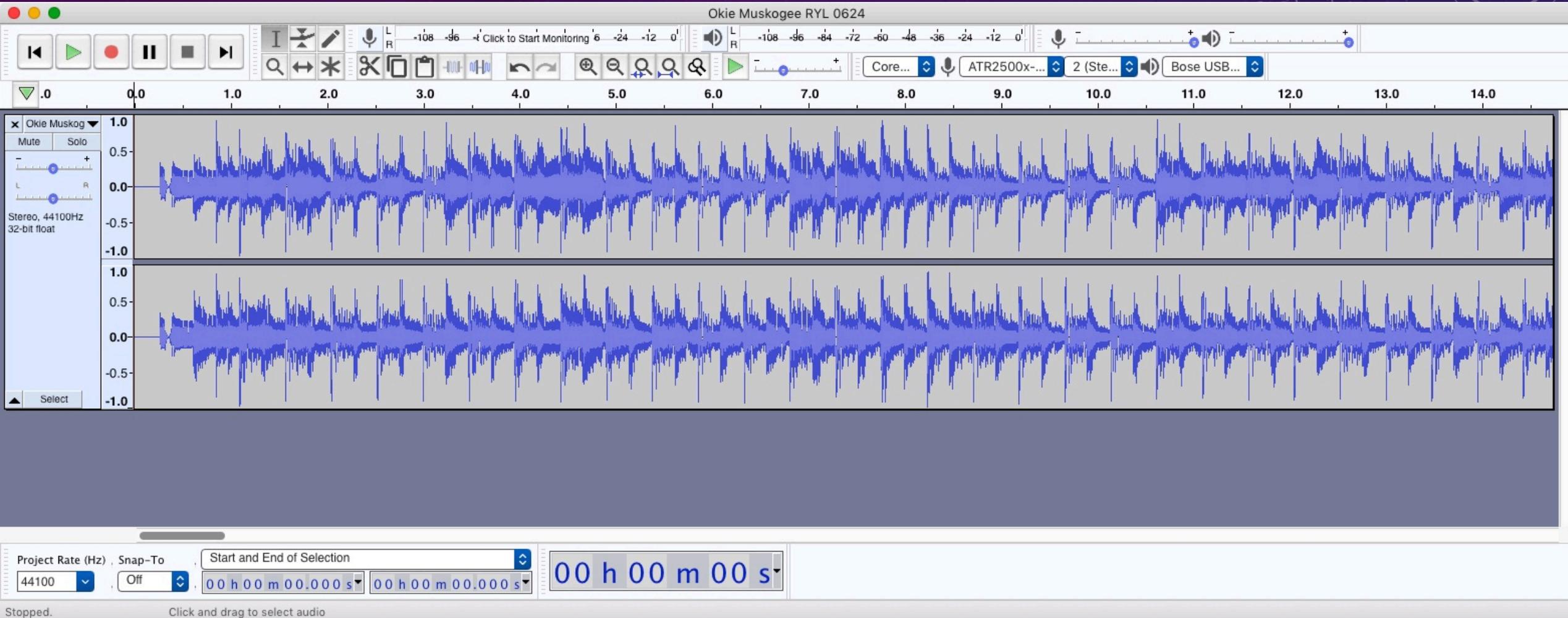
AFTER PROCESSING IN AUDACITY

OKIE FROM MUSKOGEE - K 1100



ROYAL PLATINUM BASELINE

OKIE FROM MUSKOGEE - RYL 0624



EDIT MUSIC RECORDING

LIVE DEMO - PAGE 1

- Open waveform
- Select tail end of recording and magnify
- Select All
- Menu, Effect, Click Removal (use default settings)
- Select end of record (tail) after music stopped
- Menu, Effect, Noise Reduction, select Get Noise Profile
- Select All
- Menu, Effect, Noise Reduction, OK (use default settings)
- Repeat on any noise remaining in tail

EDIT MUSIC RECORDING

LIVE DEMO – PAGE 2

- Scroll to beginning of music (lead-in)
- Select and cut needle drop (scissors or delete key)
- Select lead-in before music starts
- Repeat Noise Reduction process
 - Get Noise Profile, select all, Noise Reduction
- Select any noise left in lead-in or tail and repeat process
- Cut lead-in before music starts to ~ 1 second
- Select File, Export, Export as MP3 (or desired output format)
- Fill out Meta-data as desired (or not).

The background is a gradient from dark purple to blue, featuring a starry space pattern. On the right side, there are several technical diagrams: a large circular gauge with a scale from 0 to 210 and a needle pointing to approximately 180; a smaller circular gauge with a scale from 0 to 100 and a needle pointing to approximately 80; and a dashed circular arrow indicating a clockwise direction. In the bottom left corner, there is a partial view of a circular arrow pointing counter-clockwise.

QUESTIONS?