CSH10 User Menu Training Video Outline

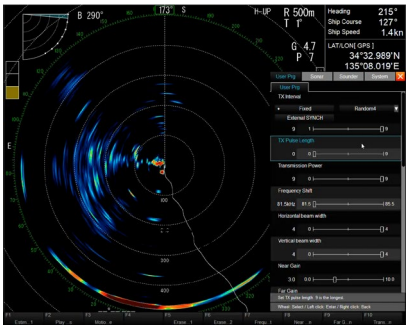
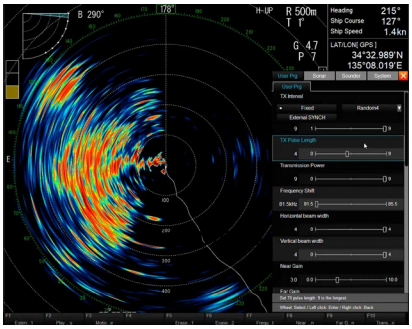
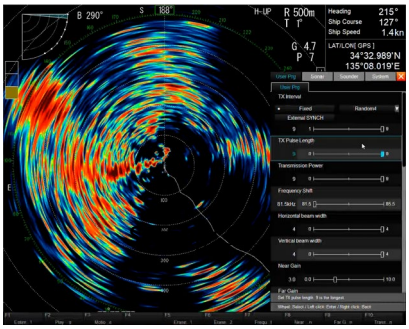
Purpose: Create instructional videos to show what effect the User Menu settings have on the echo image of the CSH10. Incorporate these videos into a master training library for end users and technicians.

CSH10 User Settings: There are21 settings in User Menu, they are related to the echo image.

1. **TX Interval:** Manual Setting, Random 1-4, and External Sync.
    a. **TX Interval Video:** TX Interval Setting
    b. **Manual:** The higher the value the faster the ping rate. This is a fixed ping rate based on the sonar range.
    c. **Random 1-4:** Selecting a Random Transmission can enhance the effectivity of the Interference Rejection
        i. Changes the transmission intervals to avoid interference ring caused by the same TX frequency. A larger setting increases the available intervals used for the random change.
    d. **External Sync:** Setting for synchronized transmission by using Key Pulse for purpose of Interference Rejection. This setting requires a signal input from another source for transmission to occur.

2. **TX Pulse Length:** If you select higher value the Pulse Length becomes longer. ***Values 1-9***
    a. **TX Pulse Length Video:** TX Pulse Length Setting

Pulse length	Detection Range	Sensitivity	Resolution	Sea Surface Noise
Long pulse length	Long	High	Low	Could be high depending on sea conditions.
Short pulse length	Short	Low	High	Low Noise

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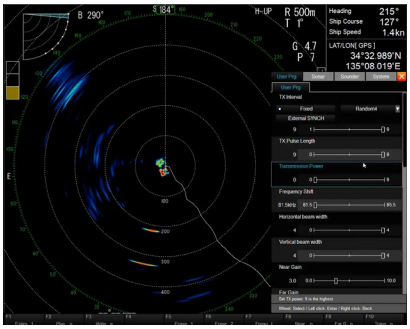
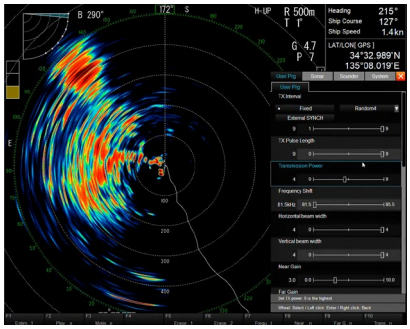
3. **TX Power:** Selecting a higher value the TX Power is increased. ***Values 0-9***
    a. **TX Power Video:** **TX Power Setting**

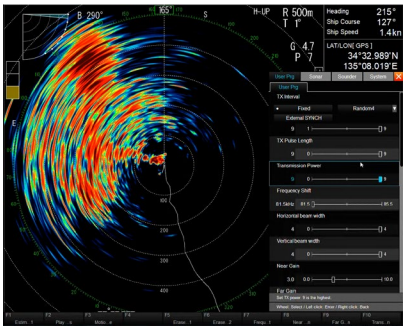
Tx Power	Detection Range	Sensitivity	Sea Surface Noise
Low Power	Short	High	Low Noise
High Power	Long	Low	Could be high depending on sea conditions.



Setting: 0

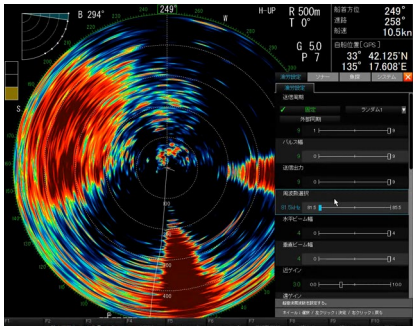


Setting: 4

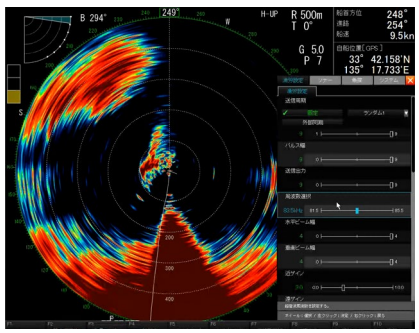


Setting: 9

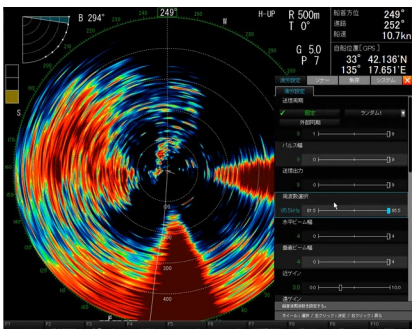
4. **Frequency Shift:** You can change the frequency from 81.5kHz to 85.5kHz (4kHz of bandwidth). Default center frequency is 83.5kHz. Adjusting the frequency will not change the echogram dramatically because of internal gain offsets are applied. Adjusting the frequency can be another way to eliminate interference from other sonars or fish finders near the vessel.
    a. **Frequency Shift Video:** **Frequency Shift Setting**



Setting: 81.5kHz

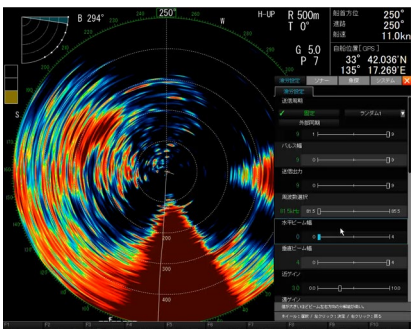


Setting: 83.5kHz

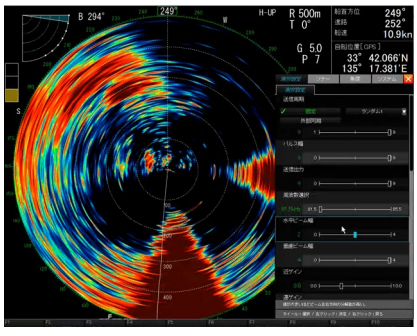


Setting: 85.5kHz

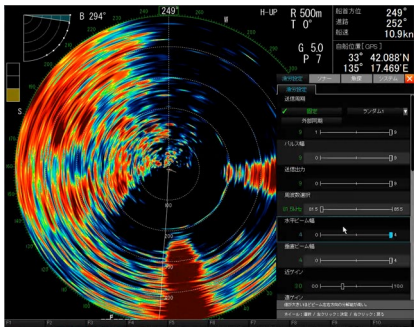
5. **Horizontal Beam Width:** You can change the Receiving Beam Width of CSH10 by bearing or circumference. The lower the value the wider the Horizontal Beam Width. The higher the value the narrower the Horizontal Beam Width: ***Values 1-5***
    a. **Horizontal Beam Width Video:** **Horizontal Beam Width Setting**



Setting: 0

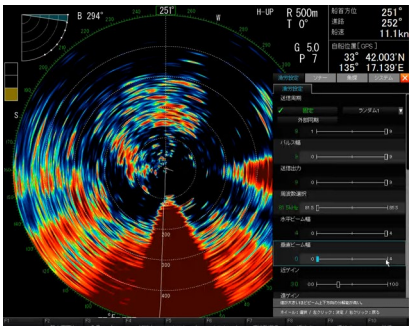


Setting: 3

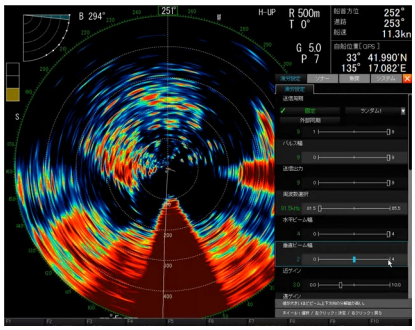


Setting: 5

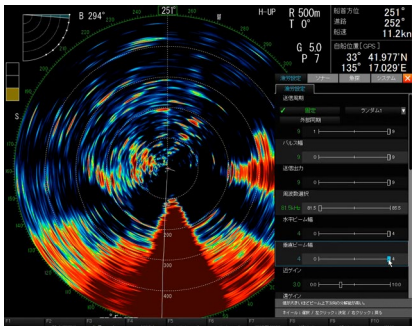
6. **Vertical Beam Width:** You can change the Vertical Beamwidth of both the transmission and receiving beam of the CSH10. The lower the value the wider the Vertical Beam Width. The higher the value, the narrower the Vertical Beam Width: ***Values 1-5***
    a. **Vertical Beam Width Video: Vertical Beam Width Setting**



Setting: 0

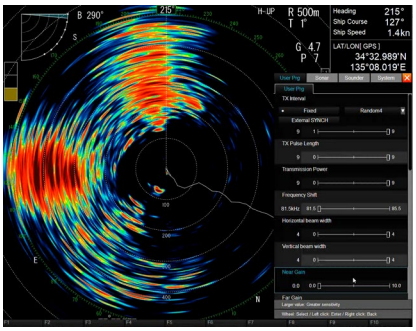


Setting: 3

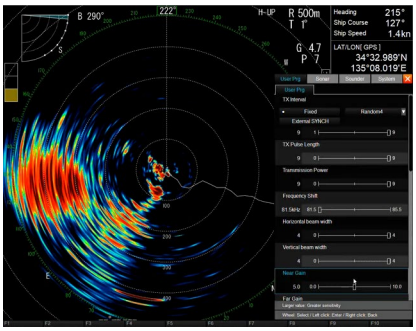


Setting: 5

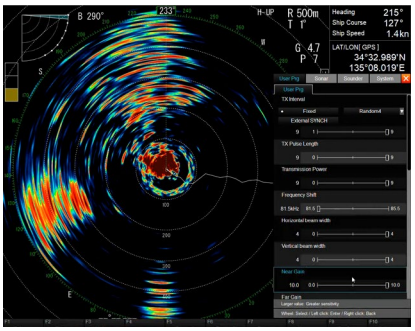
7. **Near Gain:** You can control the gain setting within the range specified by the Near Gain Distance (System Menu). If you lower the Near Gain Value, the gain within the Near Gain Distance will be decreased. If you increase the Near Gain Value, the gain within the Near Gain Distance will be increased. ***Values 0-10***
    a. **Near Gain Video: Near Gain Setting**



Setting: 0



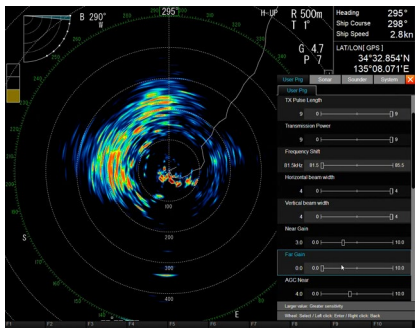
Setting: 5.0



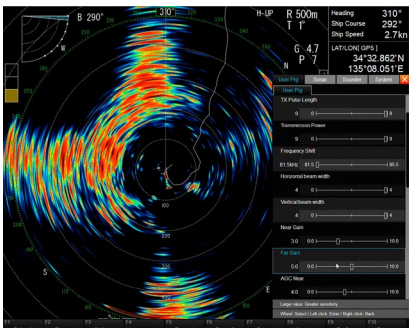
Setting: 10

Images above show effect of Near Gain Value at a Near Gain Distance set at 100m distance.

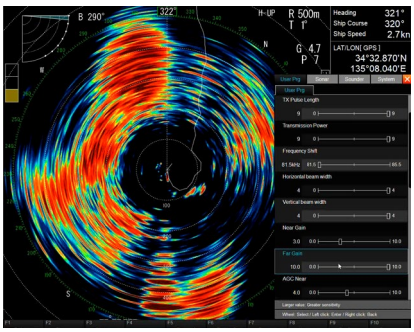
8. **Far Gain:** You can control the gain setting withing the range specified for the Far Gain Distance (System Menu). If you lower the Far Gain Value, the gain will decrease outside of the Far Gain Distance set. If you increase the Far Gain Value, the gain outside the Far Gain Distance will increase. ***Values 0-10***
    a. **Far Gain Video: Far Gain Setting**



Setting: 0



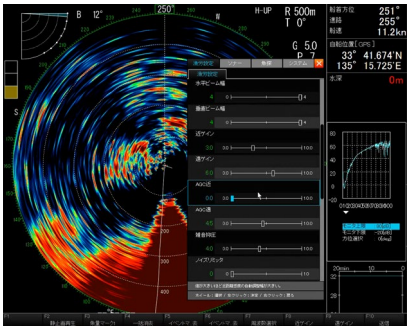
Setting: 5.0



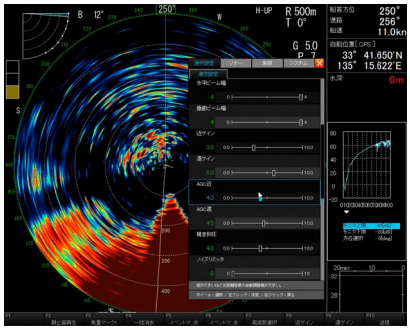
Setting: 10

Images above show effect of Near Gain Value at a Near Gain Distance set at 200m distance.

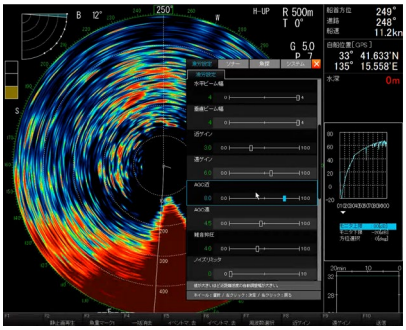
9. **AGC Near:** AGC means Automatic Gain Control. AGC Near can suppress gain within the Near AGC Distance that is set in the (System Menu). Used to suppress unwanted echoes, the higher the value the more suppression of the echo image. ***Values 0-10***
    a. **AGC Near Video: AGC Near Setting**
    b. AGC suppresses TVG Curve by setting the threshold.



Setting: 0.0

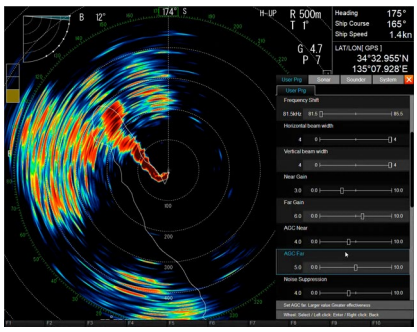


Setting: 4.0

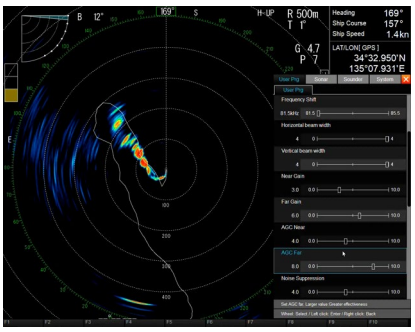


Setting: 8.0

10. **AGC Far:** AGC means Automatic Gain Control. AGC Far can suppress gain outside than the AGC Far Distance set in the (System Menu). Used to Suppress unwanted Echoes, the higher the value the more suppression of the echo image. ***Values 0-10***
    a. **AGC Far Video: AGC Far Setting**
    b. AGC suppresses TVG Curve by setting the threshold.



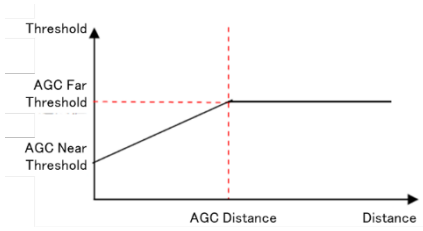
Setting: 5.0



Setting: 8.0

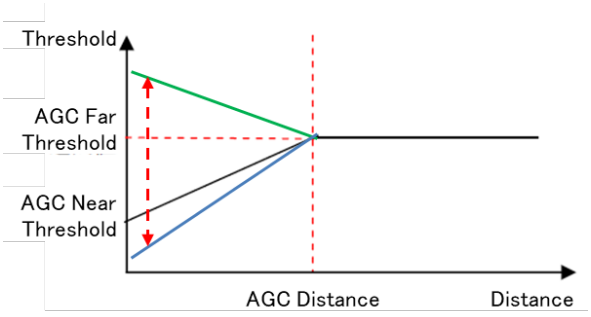
If the AGC Near setting is raised; the AGC threshold up to the AGC Distance decreases and the AGC function becomes more suppressive. (=Blue line)

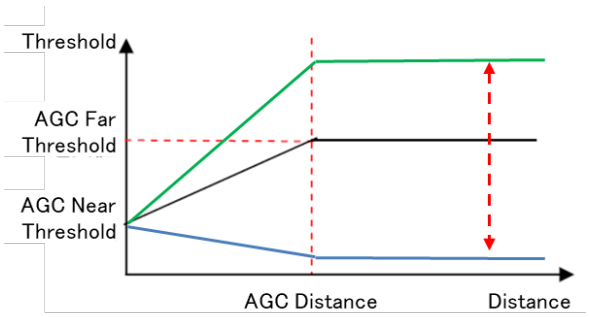
If the AGC Near setting is lowered; the AGC threshold up to the AGC Distance increases and the AGC function becomes less suppressive. (=Green line)



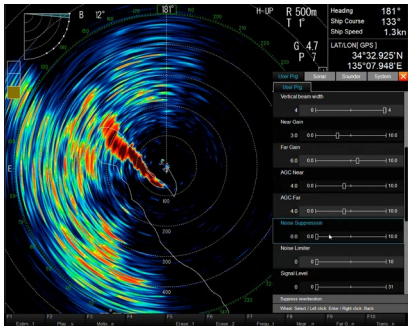
If the AGC Far setting is raised; the overall AGC threshold decreases and the AGC function becomes more effective. (=Blue line).

If the AGC Far setting is lowered; the overall AGC threshold increases and the AGC function becomes less effective. (=Green line)

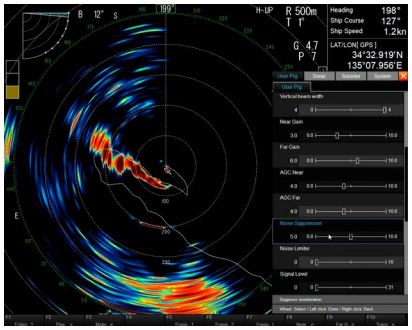




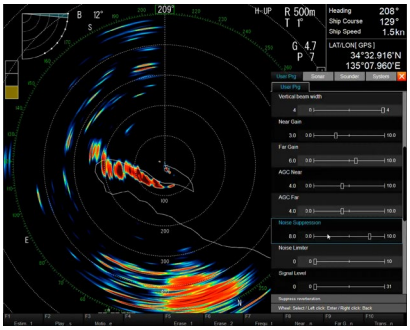
11. **Noise Suppression:** Removing or suppressing noise from weak echoes such as sea clutter, plankton, distant sea bottom, or propeller noise* can help you clear the display. The noise suppression function adjusts the gain level for weak echoes only, leaving schools of fish echoes unadjusted. ***Values 0-10***
    a. **Noise Suppression Video: Noise Suppression Setting**
    b. You can set the threshold with this setting; the echoes with levels lower than the threshold level are suppressed and the echoes which levels are higher than the threshold level are maintained.
    c. The higher the setting value the more that is suppressed. Do not you use unnecessarily high settings or small wanted echoes may be erased.



Setting: 0.0

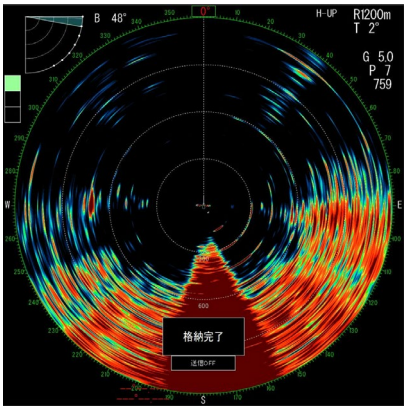


Setting: 5.0

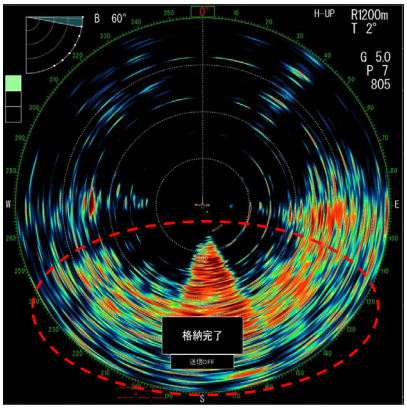


Setting: 8.0

12. **Noise Suppression Ship:** You can suppress unrequired noise echoes from own vessel & other vessels. The higher the setting value, the greater the noise suppression effect. You can set the offset to the clip level on each distance within the (System Menu). The System Menu item is called “PostClipLevel”**.** ***Values: 0-10***
    a. **Noise Suppression Ship Video:**



Setting: 0.0



Setting: 5.0

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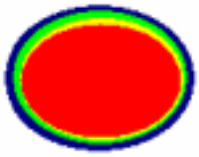
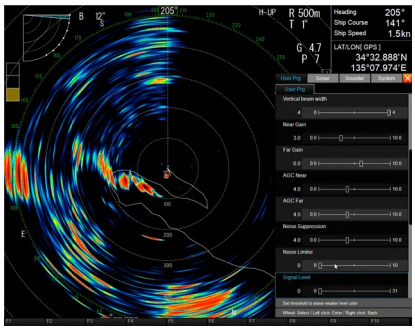
13. **Noise Limiter:** This is similar to a clutter function in some Furuno fish finders. If you select a higher value, the more suppression for low level colors. This function hardly affects high-level or strong colors. ***Values: 0-10***
    a. **Noise Limiter Video:** **Noise Limiter Setting**

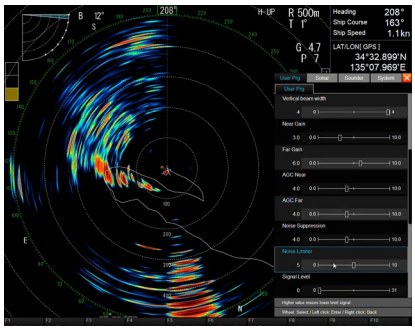
Noise Limiter: Low

Noise Limiter: High

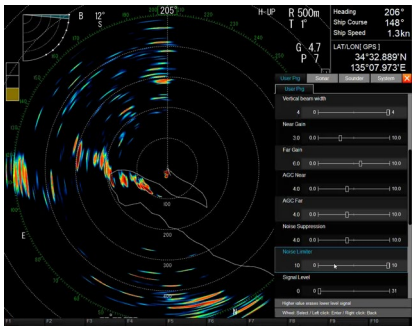




Setting: 0.0

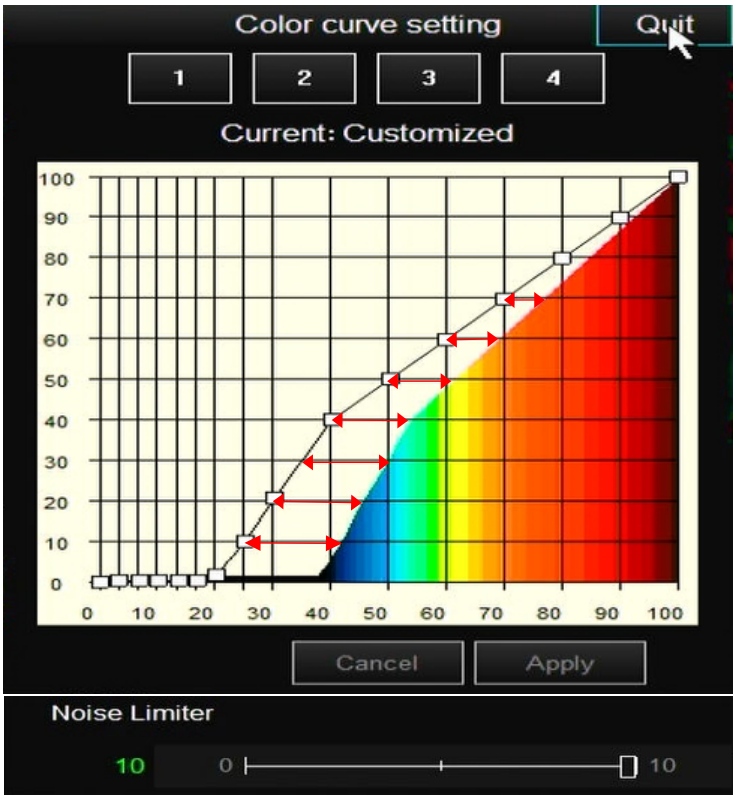


Setting: 5.0



Setting: 10.0

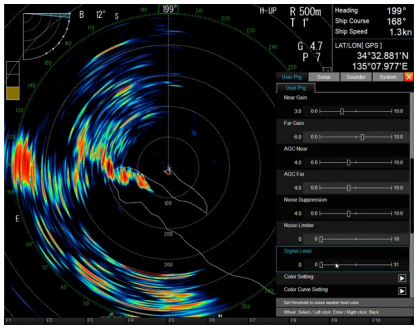
The color curve is changed as per the following pictures in accordance with each setting. The horizontal axis in the images below represent signal input strength. When the Noise Limiter value is increased the input signal level to display low-level colors gets pinched, so there is not as much signal bandwidth to display the low-level colors, resulting in reduced amount of low-level colors in the echo image.



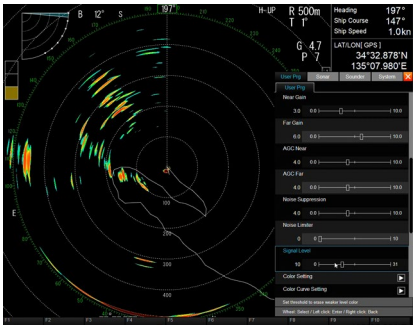
14. **Signal Level:** This function is the same as that of the conventional FSV series. You can get rid of the selected colors from the screen. As you increase the Signal Level value the number of colors to display the echo decreases; similar to delete color. ***Values: 0-31***
    a. **Signal Level Video: Signal Level Setting**

Signal Level: Low

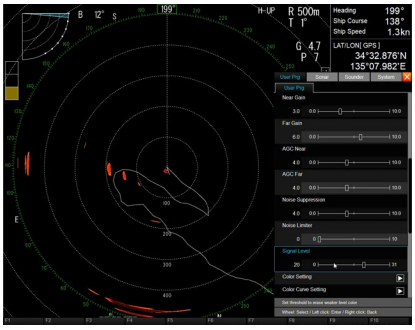
Signal Level: High



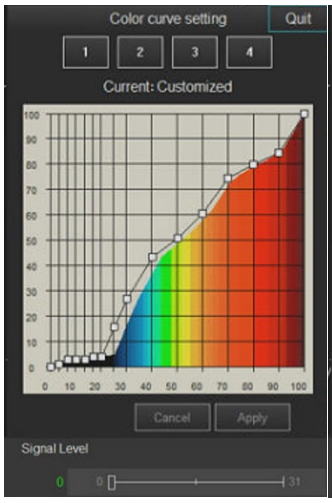
Setting: 0.0



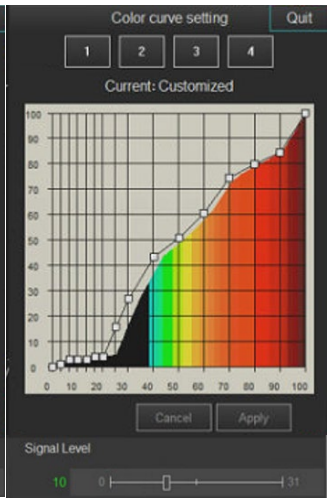
Setting: 10.0



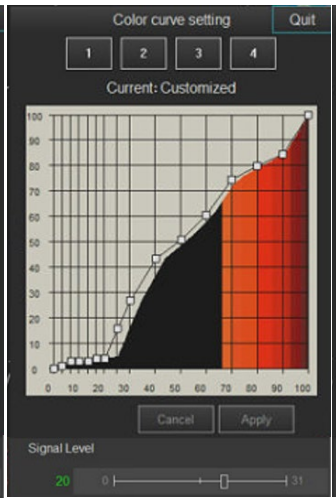
Setting: 20.0



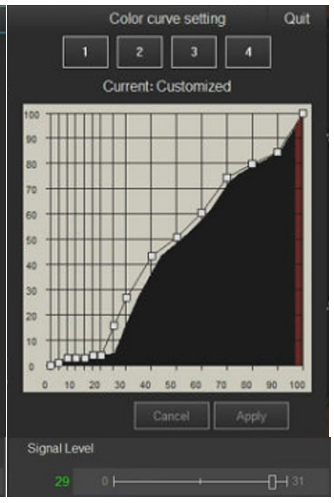
Setting: 0.0



Setting: 10.0



Setting: 20.0



Setting: 29.0

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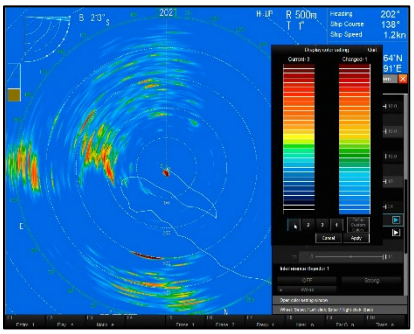
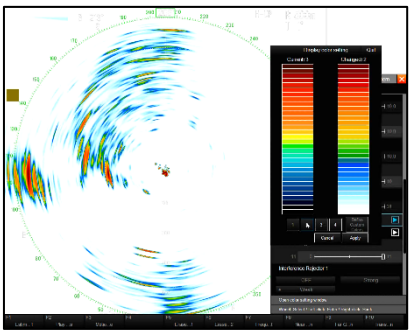
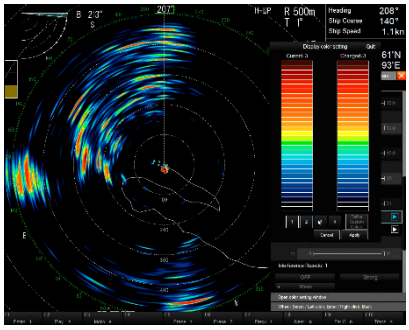
15. **Color Settings:** You can select a color palette of 4 original color palettes as follows. And you can create your own color palette by adjusting each color on the selected color palette.
    a. **Color Settings Video: Display Color Setting**
    b. The background color is decided by the lowest color on the graph.



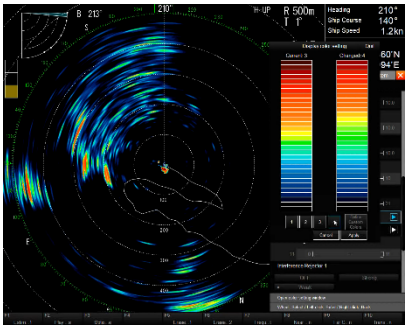
Preset 1



Preset 2

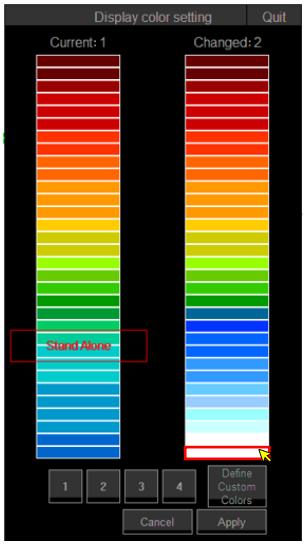


Preset 3

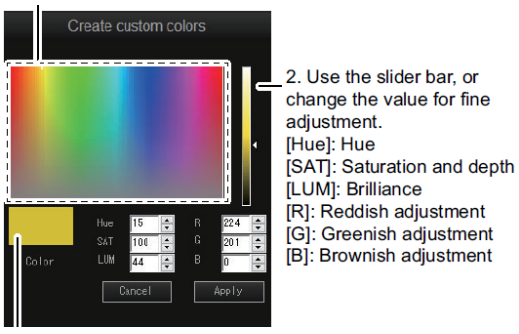


Preset 4

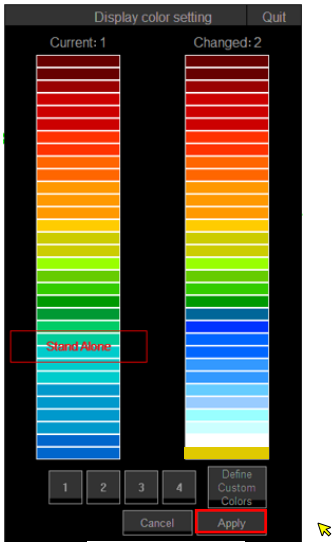
    c. To add a new color to the color pallet. Choose the color on the right side of the color bar. In the example below we will change the background color, we will select the lowest color or background color.
        i. Select the color using the trackball and left click button.
        ii. Then left click on "Define Customer Colors."
        iii. Select color of your choice, left click the Apply Button.
        iv. Then hit the apply button again for the Display Color Setting to be applied.



Step 1, 2

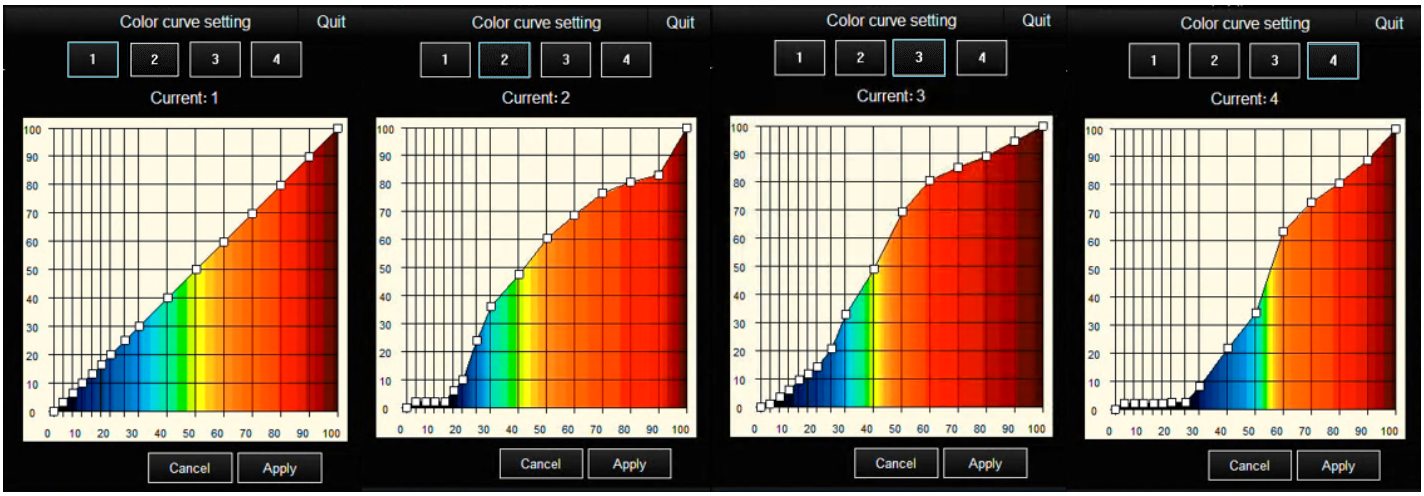


Step 3

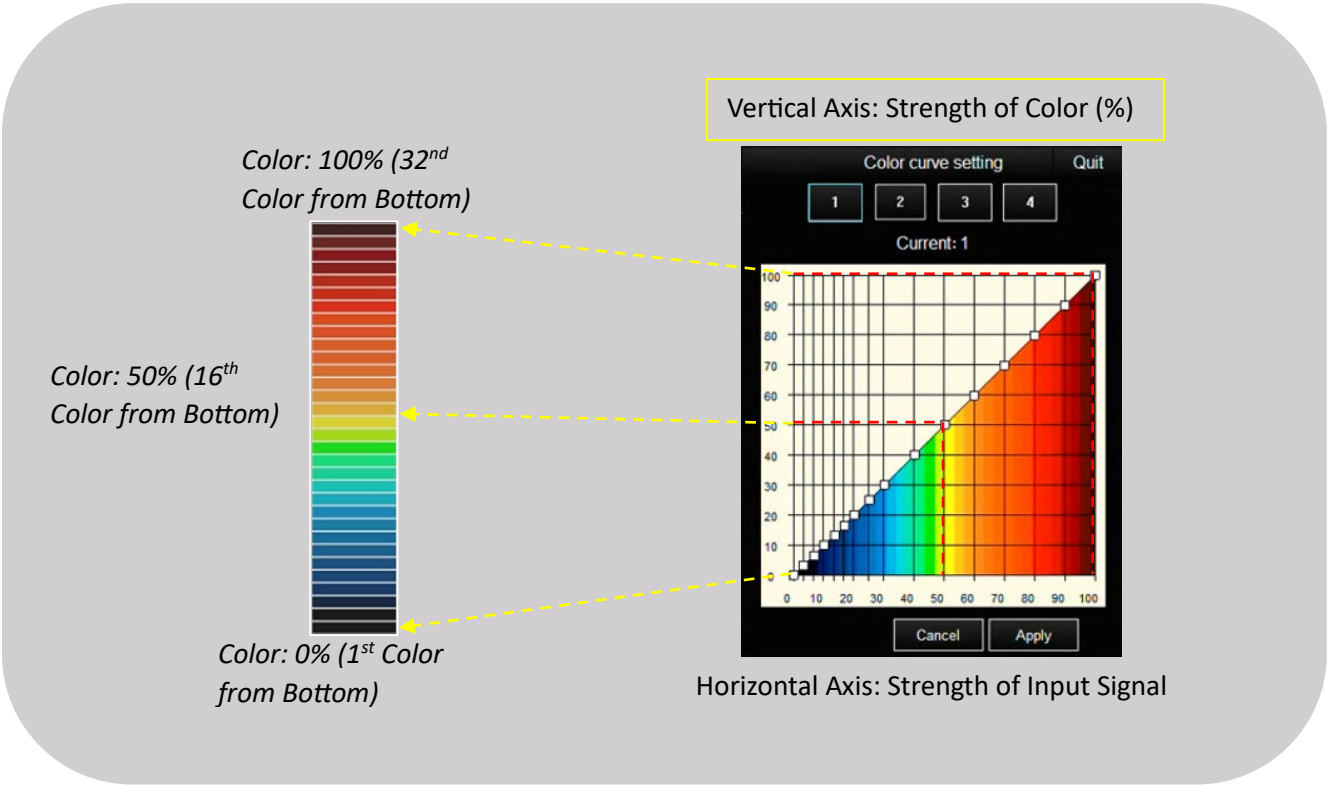


Step 4

16. **Color Curve Setting:** The Color Curve setting allows the operator to choose between 4 default Color Curve patterns. The operator also can also create their own Color Curve pattern if desired.
    a. **Color Curve Setting Video: Color Curve Setting**
    b. The Color Curve Setting allows the operator to choose the Color Response and the Echo Color as they relate to each other. These adjustments are very important for the operator to get the correct color balance of the echo images they desire.
    c. The displayed colors will be determined by the echo strength of the input signal as they compare to the color associated with the echo strength.
    d. The CSH10 can have up to 10 different Color Curve Patterns as they can be saved to a P-Setting. Please remember if you create a customer Color Curve pattern, you must save it to a P-Setting after making changes.



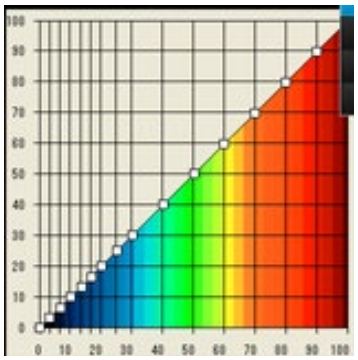
Setting 1 *Setting 2* *Setting 3* *Setting 4*



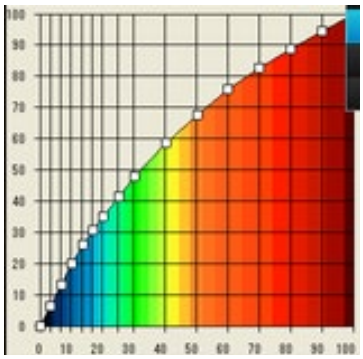
Color Curve Settings Cont.

When using Color Curve settings and Color Response settings below are a couple of ideas.

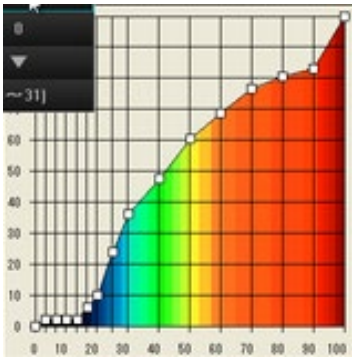
- When using for bottom discrimination and tonnage estimation:
    - Do not make a dent in Color Curve.



Linear Curve, no dents.

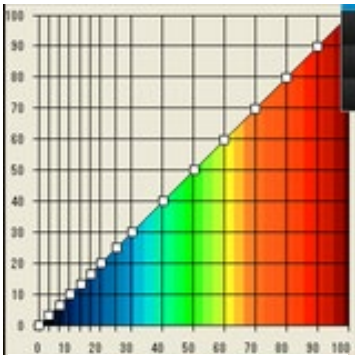


Expand the middle if there are no issues.

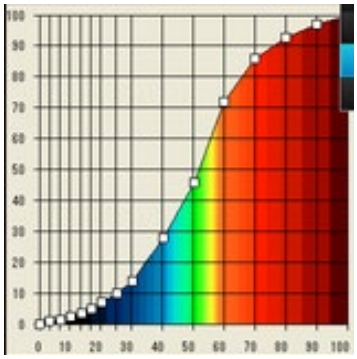


By decreasing color of strong red echoes, the center of targets can be easily identified.

- For Pelagic Fishing where no bottom echo is present.



Linear Curve, no dents.



Modified S-Curve, slight S-Shape

Convert the curve into the S-curve to prevent unwanted reflections and to change weak reflected echoes to strong echoes. However, the strength of reflected echoes cannot be determined in an excessive S-curve. Almost all echoes are displayed in red, and others are hardly displayed.

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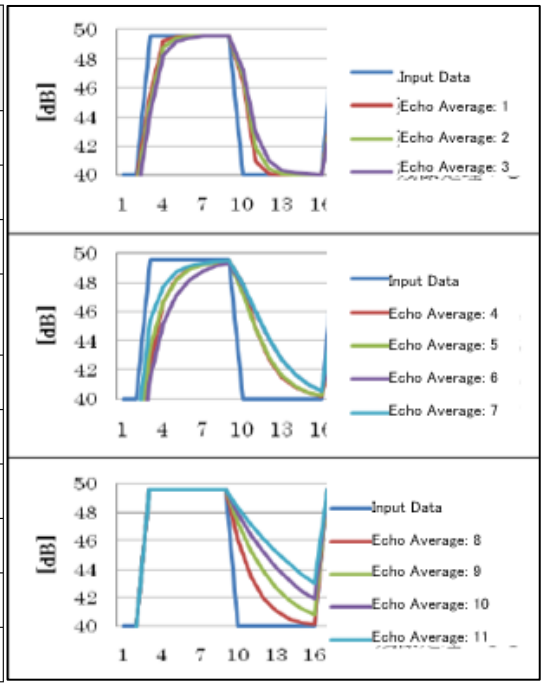
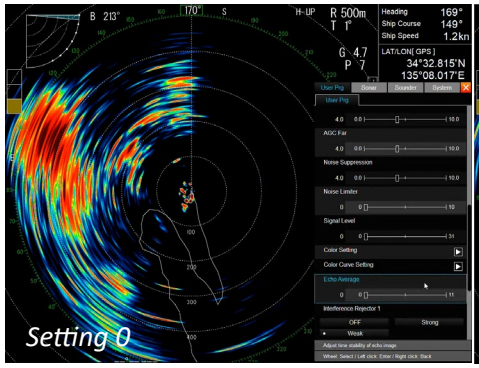
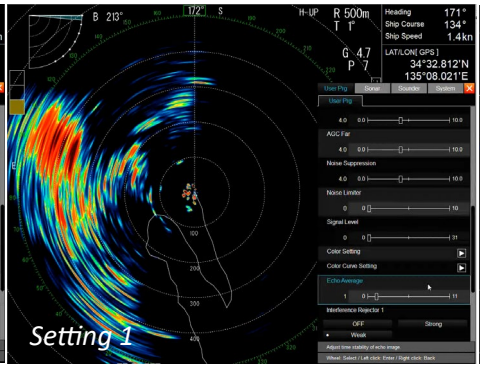
17. **Echo Average:** The echo average function adjusts echo image rise time and echo image afterglow (the amount of time an echo signal remains on the display). This feature can be useful for watching echo movement. Adjust the settings so that the target is clearly visible on the display. **Values: 0-11**

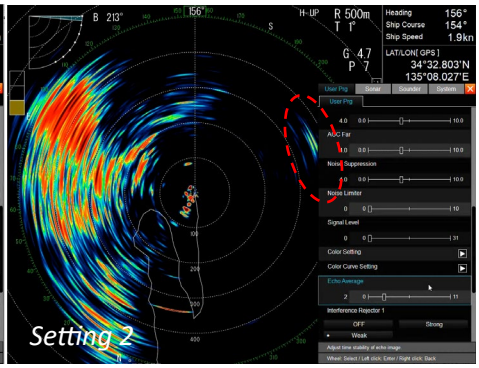
a. **Echo Average Video: Echo Average Setting**

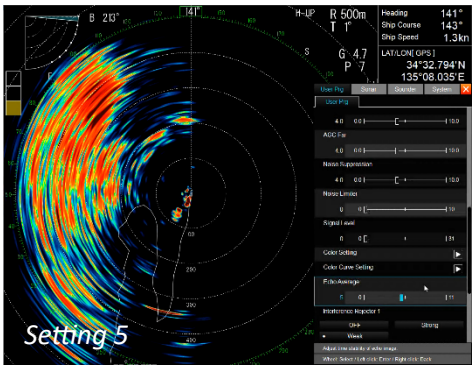
Classification of Echo Average	Rising responsiveness	Falling afterglow effect
Echo Average A: 1	Medium	Low (Low)
Echo Average A: 2		Low (Medium)
Echo Average A: 3		Low (High)
Echo Average B: 4, 5	Slow (Medium)	High
Echo Average B: 6	Slow (Slow)	High
Echo Average B: 7	Slow (Fast)	High
Echo Average C: 8	Fast	Low
Echo Average C: 9		Medium (Low)
Echo Average C: 10		Medium (High)
Echo Average C: 11		High



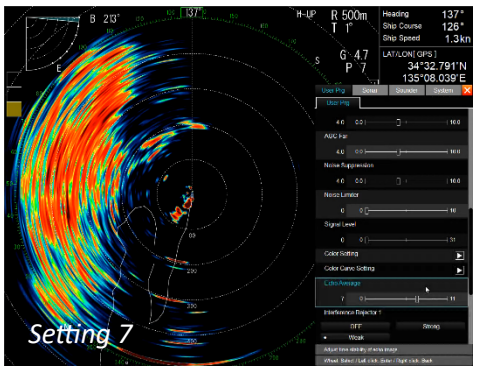


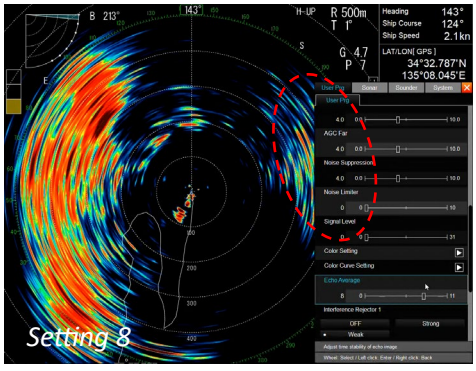


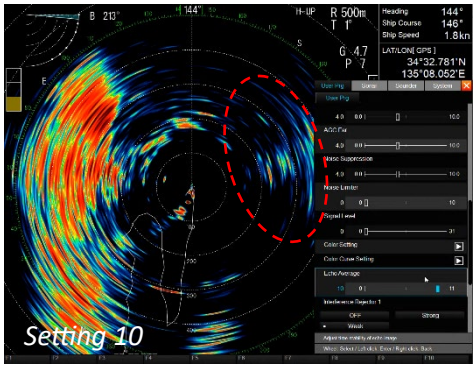


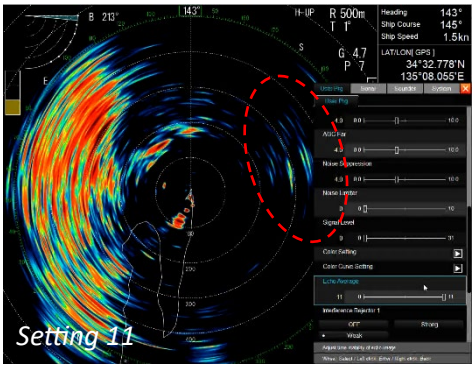


When you use the settings which the rising responsiveness is faster, some weak noise echoes may appear.

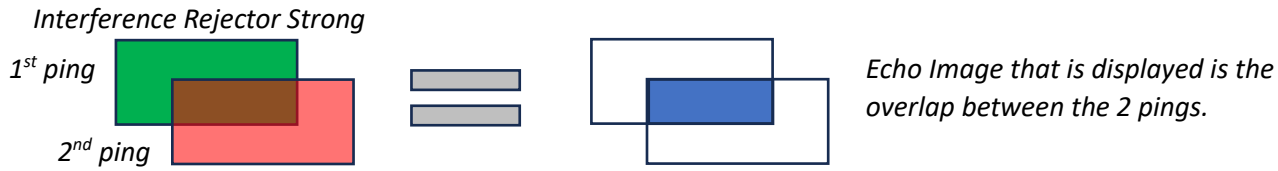


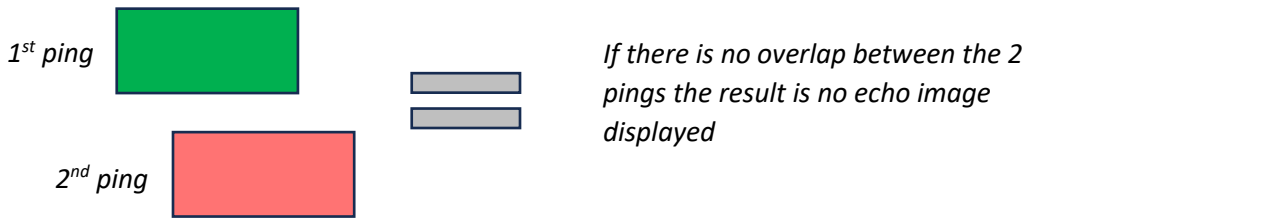


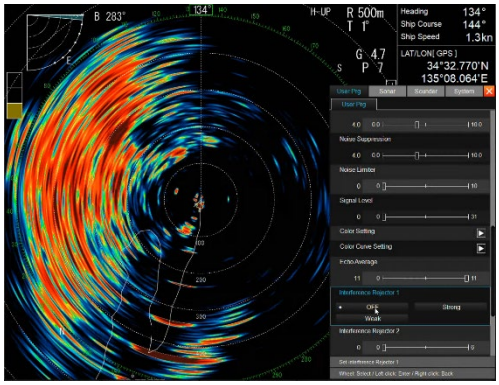




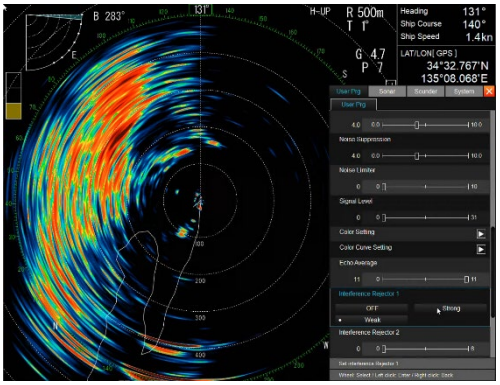
18. **Interference Rejector 1:** This is a setting to eliminate unwanted reflections appearing randomly. **Values: Off, Weak, Strong**
    a. **Interference Rejector 1 Video: Interference Rejection1 Setting**
    b. Interference Rejector Off- No interference rejection occurring.
    c. Interference Rejector Weak- The system will compare 3 separate pings and display the echo image of the medium echo image. Not the highest, not the lowest, but the middle of the 3 pings.
    d. Interference Rejector Strong- The system will compare the 2 separate pings; the output result is the overlap between the 2 pings.



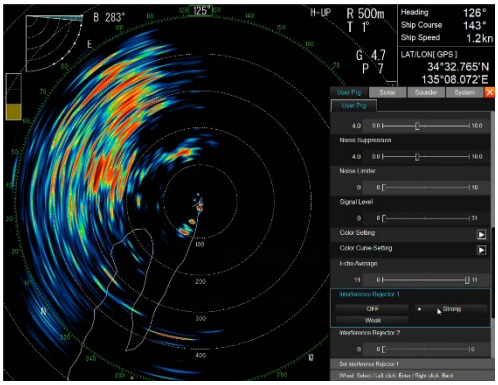




Interference Rejector 1: Off



Interference Rejector 1: Weak



Interference Rejector 1: Strong

19. **Interference Rejector 2:** This is setting is designed to help minimize interference from other working sonars or fish finders on or around the vessel. The higher the value increases the rejection effect. **Values: 0-6**
    a. **Interference Rejector 2 Video: Interference Rejector 2 Setting**
    b. Too high of value, could remove small, wanted echoes.

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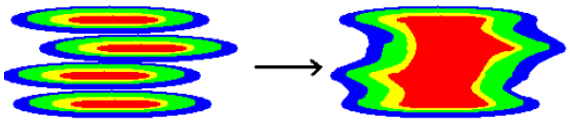
20. **Smooth Echo Range:** Use this setting to smooth the echo image by the range. The higher the setting the more smoothing is applied to the echo image by range. **Values: 0-5**
    a. **Smooth Echo Range Video:** Smooth Echo Range Setting



Smooth Echo Range: 0 and 5

21. **Smooth Echo Circular:** This setting is to smooth the echo image by bearing. The higher the setting the more smoothing is applied to the echo image by bearing or circular direction. **Values: 0-5**
    a. **Smooth Echo Circular Video:** Smooth Echo Circular Setting

Smooth Echo Range: 0 and 5

End