2. Now that the big dish antenna is pointed in the right direction, you want to turn on your radio receiver. **Click** on the **Receiver** button in the upper right of the telescope control window.

- A rectangular window will open which has the controls for your receiver on the right, and a graphic display of the signal strength versus time on the left. (See Figure 2.)
- The frequency the receiver is set to is displayed in the window near the upper right. It is currently set to 600 MHz, and you should leave it there. Later, when you want to change frequency, there are buttons next to it to tune the receiver to different frequencies. Fine tuning can be accomplished by changing the **Freq. Incr**. (frequency increment), button to its right in conjunction with the main tuning button. There are also buttons to control the horizontal and vertical scale of the graphic display.

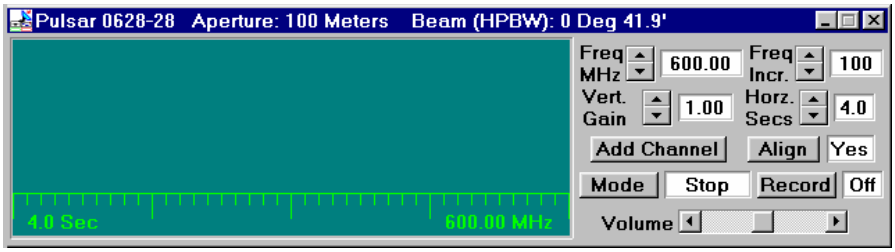

Figure 2: Main Receiver Window

3. Let's look at what the pulsar signal looks like. **Click** on the **Mode** button to **start** the receiver. You'll see a graphical trace begin at the left of the screen, tracing out the signal strength versus time on the graph. It looks like a random jiggle, which is the background static, with an occasional brief rise in signal strength, which is the pulsar signal. (If your computer is equipped with sound, you can also hear what the signal would sound like if you converted the signal to sound, like you do when listening to a radio station). Note how regularly the signal repeats.

4. **Click** on the **Mode** switch again to **turn off** the receiver. Note that it completes one scan of the screen before it stops.

5. Let's see what the other controls do. **Start** the receiver again. Now watch the trace as you change the **Vertical Gain** control by **clicking on the up and down buttons**. This is like the volume control on a radio, except it only controls the graphic display.

- When the gain is high (you can turn it up to 8), the graphic trace is bigger, both the background and the pulsar signal are magnified.
- When the gain is low (you can turn it down to 0.25) you can barely see the pulsar. You'll find that the best setting is one where the pulses are high, but don't rise above the top of the display.
- Write down the gain setting you think is best here: _____. The setting will vary from pulsar to pulsar, and also is dependent on how you have set the Horz Sec control. (It should be set at 4, right now).

6. Let's try changing the horizontal scale (Horz Secs). ***You can only set this control when the receiver is off.*** **Click the Mode switch off**, and when the trace stops, reset Horz Sec to 2. This will make the graphic trace take 2 seconds to sweep across the screen. **Start the receiver again**.

- You will see the trace race across the screen faster.
- You may also note that the signal seems weaker, because your receiver is spending less time collecting radio waves before it displays them on the screen. (Astronomers would say the "integration time" is shorter.)

7. **Try resetting the Horz Sec to 0.5 sec**. The pulses seem so wide you may have trouble distinguishing them, and you may have to raise the vertical gain to make them out at all.