SULTAN TROUBLESHOOTING

Troubleshooting procedure for finding Gain and Recover values in difficult powder applications:

Problem: The real level echo may not be seen at all at lower levels in the measuring span, OR a false echo may be seen at a higher level than the correct level during difficult conditions, or when the real level is low. Often this false signal will be at a very short distance from the sensor (less than 3m). Recover Diagnostic may show a value higher than 0% at this time (may be close to the Recover Max parameter setting). This problem is most likely to occur in powder applications, or where the user has set higher than default gain levels, or the value of the Recover Max parameter is large (10-40%).

This procedure assumes that the problem is NOT caused by incorrect mounting, or nearby structure or target causing the false short distance signal. Improper mounting, poor position selection, or false echoes caused by nearby structures or high level switches should be corrected (mechanically) before attempting to adjust for best performance in difficult applications. Any such problems will limit the performance of the instrument to less than its maximum.

These steps go through a simple process to find out how much gain is 'too much' (will cause short distance echo), find out how much gain is really 'enough' to see the correct echo (which may need the Slope Dist parameter decreased as well to let the gain increase more at longer distances), then set the Gain and Recover values to be sure that the correct echo is seen, but the false echo can not be seen even if all available Recover is used.

This procedure can be done from the keypad of the instrument or from Goshawk 2.

1- Set Gain back to its Default Value.
2- Set Recover First and Recover Max to 0%
3- Observe Echo (if any?)
4- If there is no Echo at all, or no false echo at a short distance, then you can increase Gain- in small steps (perhaps 1% steps) until you find an incorrect echo at a short distance- otherwise reduce Gain further and try again.

You may actually find the real echo at a longer distance during this step. If you do, remember at what gain the correct signal appeared, and continue increasing until the incorrect echo appears at a short distance.

Now you know how much gain is too much at the short distance- your Gain setting must always be less than the value where the short distance echo appeared, or else you WILL DEFINITELY see a false echo at the short distance.

5- If you did not find the real echo at a longer distance during this process, OR the Gain value which gives the correct echo is too close to the Gain value which creates the false echo at a short distance (within about 2-5%) then reduce the gain to the default value, then change the 'Slope Dist' parameter to half of its default value, then repeat Step 4 above.

6- If you did find the real echo at some gain level in the above process, then set the Gain to the value which you have remembered (when the correct echo appeared) PLUS 2% (safety margin). IF THIS VALUE IS LARGE ENOUGH TO CREATE A FALSE ECHO AT A SHORT DISTANCE, THEN YOU MUST GO TO STEP 5, then repeat step 4.

7- Set the Recover Max and Recover First parameters both to a percentage given by:
((Gain which created false echo at short distance) – 5% safety margin) – (Gain setting from Step 5 or Step 6 above)

If the value found in this step is negative, then set Recover First and Recover Max to 0%

Gain and Recover should now be at reasonable values to follow the correct echo.