Rebuilding and Improving my 6m Dish

OR

How G3LTF spent most of the winter of 2013-14
G3LTF Dish #1 4.8m, 0.3 f/D 1964
Dish # 2, 1970-1993 0.5 – 0.37 f/D
4.8m > 6.5m  moved QTH twice
1993 – A new start - 4m 0.5f/D
Metal replaces Wood!
1995 at IO91GG — Now 6m, 0.375f/D
2012 Now 100% 6mm mesh covering with intermediate ribs (3.4GHz feed)
November 22nd 2013 !!

Options

Take up basket weaving?

Go Chase Dx on 160m CW?

Rebuild?

Rebuild and Improve
The kit of parts
The next question..... How and why did this happen and how do we fix it for the future?
The HA axis (tube!) broke at the weld
Assembling the new HA axis with new, sealed, bearings
Next: Check all ribs in the jig and repair the broken ones
Next Question.. Do I want to change the mesh?

G4CCH Dish

Test with some 1.5mm S.S mesh
We need very accurate alignment of ribs and hub for good performance above 23cm.
Effect of Surface Errors on Dish Gain at 3400MHz

Gain Loss dB

Surface error dimension of 30mm

RMS Surface error in mm
Effect of Surface Errors on Dish Gain at 5760MHz

Gain Loss
dB

Surface error dimension of 18mm

RMS surface error mm
Make a new, (better!) Alignment Jig
Lifting the HA – Declination Axes into place
And next is the Hub...
Finally we start to re-fit the ribs
The alignment jig in action
5 days later, the outer rim being fitted
Now for the tedious bit... mesh covering
The original fitting of the 6mm mesh, pop-riveted to the ribs and seams soldered.
Finally...March 5th 2014
# Measured Gain Improvement

All bands needed re-focussing, much sharper focal point

<table>
<thead>
<tr>
<th>Using Sun Noise Measurement</th>
<th>Using Moon Noise Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>23cm small ~ 0.2dB</td>
<td>23cm small ~ 0.2dB</td>
</tr>
<tr>
<td>13cm 0.7dB</td>
<td>13cm 0.6dB (+0.4dB on EMECalc G/T)</td>
</tr>
<tr>
<td>9cm 1.7dB</td>
<td>9cm 1.4dB (-0.5dB on EMECalc G/T)</td>
</tr>
<tr>
<td>6cm 0.6dB</td>
<td>6cm 0.9dB (-2.2dB on EMECalc G/T)</td>
</tr>
</tbody>
</table>
But... Always another Question!

9cm pattern 2014

9cm pattern 2008
We have not succeeded in answering all your problems. The answers we have found only serve to raise a whole set of new questions. In some ways we feel we are as confused as ever, but we believe we are confused on a higher level and about more important things.
THANKS FOR LISTENING