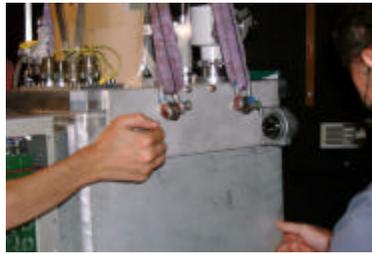


NAOMI INSTRUMENT CHANGE Removal from GHRIL. FIRST DRAFT.

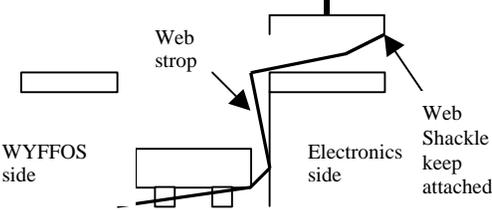
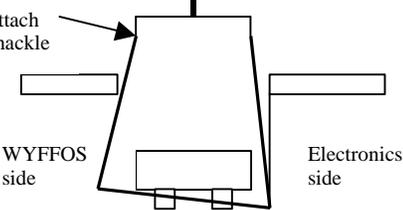
*Input required from NAOMI team.

Task	Notes	Done
1. *Fit all optical covers on NAOMI.		
2. *Park all mechanisms.		
3. *Shut down all computers.		
4. *Turn off chiller and remove water cooling lines.		
5. *Turn off all electronic equipment. Keep INGRID cold cycle cooler running and filled with LN2.		
6. * Remove identified optical components to be stored in their boxes. Are all remaining components secure and positively located?		
7. Locate all lifting slings and equipment to lift NAOMI	Two large yellow web slings. Four large shackles. 3 equal strops same length as turn buckles on the ISIS lifting frame. Four equal strops	
8. * Un-cable NAOMI.	1-8 should be completed before the day of the lift.	
9. *Cover up NAOMI. We need a proper cover building for this?	Day of the lift.	
10. Remove GHRIL roof centre section.	Use four (yellow) 3 metre long strops. Remove four bolts and the dust covers. Inside unplug electrical connections to the lights. Place roof on ground floor away from the entrance to the aluminising area.	
11. Turn Off INGRID helium compressor and remove helium pipes.		
12. Take down cable frame above NAOMI & INGRID.		



<p>13. Lift INGRID off the NAOMI table down to Focal test station.</p>	<p>Use four purple strops and a block and tackle for fine movement. Place on the little blue trolley and seat INGRID on foam or rubber. Set up cold cycle cooler. Keep cold and ensure telescope log is updated with LN2 filling instructions</p>	
<p>14. Place NAOMI support trolley in front of Aluminising area.</p>	<p>NAOMI support trolley must have compliant rest pads e.g. foam /rubber.</p>	
<p>15. Check lifting equipment set-up using ISIS lifting frame as the spreader beam. Six staff required two on GHRIL roof opposite sides. Four others in GHRIL one on each kinematic mount. Ensure dome rotation is set slow.</p>	<p>Treat this like lifting the primary mirror. Staff above NAOMI must not have anything in their pockets or use tools or equipment above NAOMI. Treat as a 2.0 tonne lift. Ensure all shackles and lifting equipment are in good condition and sufficiently rated. Use the orange chain block. Set it up with just 150 mm of chain in use as lift height. Taking and removing weight must be done with the chain block.</p>	



<p>16. With all slings attached move crane over GHRIL roof from the electronics room side. When above electronics roof detach the shackles that attach the web slings on the WYFFOS side of the table.</p>	<p>NB extremely delicate and irreplaceable equipment. Do not pass shackles over Naomi or work on shackles above NAOMI.</p>	
<p>17. Lower the loose end off the web sling down towards the staff in GHRIL to feed under the table.</p>		
<p>18. Once web is under table move crane over NAOMI and connect shackle to WYFFOS side</p>		
<p>19. Check all strops and shackles are correct and no twists.</p>		
<p>20. Take up gross slack with crane.</p>		
<p>21. Lift up NAOMI with chain block.</p>	<p>Ensure lift is square. Optical table must always be level throughout the lift. Some components only locate in their mounts under gravity. We should investigate fitting stops or holders to ensure there is no possibility of components moving. This needs to be checked with the NAOMI crew.</p>	
<p>22. Once you are happy and the weight of the optical table is taken. Lift the table out of GHRIL using the crane in slow hoist.</p>		
<p>23. Once high enough to clear the GHRIL roof rotate dome so table passes over the WYFFOS section of the roof.</p>	<p>You can also rotate the telescope if you wish. Use local engineering controls.</p>	
<p>24. Position optical table so it is inline with entrance to aluminising doors.</p>	<p>NB. Only carry out one move/lift operation at once.</p>	
<p>25. Lower slow then fast, down on to the support trolley. Complete the final lowering with the chain block.</p>	<p>Do not forget to use compliant material on top of the support legs.</p>	
<p>26. Once on trolley wheel trolley into aluminising area.</p>		
<p>27. Remove lifting frame of the crane.</p>		
<p>28. Lift GHRIL roof back into place.</p>	<p>Fit four bolts, dust covers and light connections.</p>	

