Post-processing shall check:

Per each ballast shift produce a table of:

1. Shift No
2. slope of fitting line heel
3. slope of fitting line pitch
4. standard deviation heel record
5. standard deviation pitch record
6. plot x=number of record, y=heel
7. plot x=number of record, y=pitch
8. No XXXX of tank water is moved from
9. Its LCG and TCG
10. Level in that tank
11. Corresponding weight
12. No XXXX of tank water is moved to
13. Its LCG and TCG
14. Level in that tank
15. Corresponding weight
16. Transverse moment
17. Longitudinal moment
18. Average heel
19. Average trim
20. draught
21. corresponding displacement

These should be all information that is calculated within the MOSIS code, except points b) to g).

Based on these data, the following will be checked as part of the post processing:

* + - 1. Consistency of heel and trim measurements for all inclinings:
         1. highlight any record that has higher standard deviation or slope of fitting line. Higher= one order of magnitude larger.
      2. Verify unexpected change of trim (or unexpected change of heel): given tank A (ballast from) and tank B (ballast to) and their LCG and TCG we know if to expect only transverse inclining, only longitudinal or both.
         1. If at shift “k” LCG\_tank(B) – LCG\_tank(A) < 1m 🡺 the shift is only transversal 🡺 trim(k) – trim(k-1) < 0.1 degrees. If > 0,1 deg give warning

Here trim(k) and trim(k-1) are the average of the MOSIS record of trim at the inclining k and k-1, divided by 60, since MOSIS measures in minutes of arc.

LCG\_tank(A) and LCG\_tank(b) are found entering the tank tables of the relevant tank at the level they are: tank(A) and tank(B) final sounding level. Enter tank tables at that level to find corresponding volume, lcg, tcg, vcg. I think these are extracted in the MOSIS program too, check.

* + - * 1. If at shift “k” TCG\_tank(B) – TCG\_tank(A) < 1m 🡺 the shift is only longitudinal 🡺 heel(k) – heel(k-1) < 0.1 degrees. If > 0,1 deg give warning
      1. Verify expected change of heel:
         1. LET’S LEAVE THIS FOR NOW
      2. Consistency of draughts input:
         1. For semisubs: use the compute plane function.

Use 3 of the 4 draught measurements and compute plane to calculate the fourth draught (expected). Compare this with the measured fourth draught.

If calculated (expected) draught – measured draught > 0.05 m, flag warning.

Repeat for all four draught.

* + - * 1. For ship shaped vessels: per each one draught measurement, known its position, calculate draughts at all other measurements position using heel and trim from inclinometers. DETAILS WILL FOLLOW
      1. Check displacement change
         1. Mean draught at test(k) 🡺 calculate corresponding displacement (this is done in the MOSIS code) and TPC
         2. If abs(displacement(k) - displacement(k-1)) > TPC flag displacement change
      2. Check change of total ballast content in the tanks used to incline
         1. Per each shift: From level start and level end of tank(A) find tank weight at start and end. Calculate weight at end minus weight at start for tank(A) for shift k, let’s call this weight(k,A)
         2. From level start and level end of tank(B) find tank weight at start and end. Calculate weight at end minus weight at start for tank(B) for shift k, let’s call this weight(k,B)
         3. Check that abs(weight(k,A) – weight(k,B)) < 1 tonne (this value to be checked/confirmed)
      3. Check that any displacement change equalise the ballast change
      4. Check ballast removed from tank A equal ballast added to tank B