

## PROCEDURE 1.15: Formulier MBES afnametest IHO NL norm A

|               |              |                        |            |
|---------------|--------------|------------------------|------------|
| Datum afname: | 24-11-2020   | Locatie:               | Vlissingen |
| Scheepsnaam:  | ms Harmonie  |                        |            |
| Aanwezig:     | Sr. Surveyor | R. Stek                |            |
|               | Surveyor:    | R. Stek / J. de Geyter |            |
|               | Schipper:    | Luc                    |            |
|               | Klant repr.: | J. de Geyter           |            |

Indien van toepassing: Controle secundair systeem

|                             |                                           |              |            |              |                               |
|-----------------------------|-------------------------------------------|--------------|------------|--------------|-------------------------------|
| Identificatie CP:           | Naam:                                     | VP01         |            |              |                               |
|                             | $\sigma_x/y$                              |              | 0.02 m     |              |                               |
|                             | $\sigma_z$                                |              | 0.02 m     |              |                               |
| Gegevens systeem:           | Fabrikant:                                | Trimble      |            |              |                               |
|                             | Type:                                     | SPS585       |            |              |                               |
|                             | <i>incl. <math>\sigma</math> niveleer</i> | $\sigma_x/y$ | 0.01 m     |              |                               |
|                             |                                           | $\sigma_z$   | 0.015 m    |              |                               |
| Bekende waarden:            | x                                         |              | 30579.104  |              |                               |
|                             | y                                         |              | 385633.156 |              |                               |
|                             | z                                         |              | 4.488      |              |                               |
| Gemeten waarden:            | x                                         |              | 30579.112  |              |                               |
|                             | y                                         |              | 385633.151 | $\sigma_x/y$ | 0.010 m                       |
|                             | z                                         |              | 4.511      | $\sigma_z$   | 0.013 m                       |
| Toetsing secundair systeem: | $\Delta x/y$                              | 0.01 m       | Voldoet:   | JA           | Eis $\Delta$ of $\lambda$ max |
|                             | $\Delta z$                                | -0.02 m      | Voldoet:   | JA           | 0.045 m                       |
|                             | $\lambda \sigma_x/y$                      | 0.495        | Voldoet:   | JA           | 0.050 m                       |
|                             | $\lambda \sigma_z$                        | 0.424        | Voldoet:   | JA           | 0.950                         |
|                             |                                           |              |            |              | 0.950                         |

### Stap 1: Inmeten Primaire antenne

|                            |                 |                                        |            |              |                  |
|----------------------------|-----------------|----------------------------------------|------------|--------------|------------------|
| Positie Primaire antenne:  | Uitgevoerd dmv: | Vast Punt/Secundair systeem/Anders nl. |            |              |                  |
| Bekende / gemeten waarde:  | x               |                                        | 30570.085  | $\sigma_x/y$ | 0.017            |
|                            | y               |                                        | 385451.038 |              |                  |
|                            | z               |                                        | 4.615      | $\sigma_z$   | 0.021            |
| Acquisitiewaarde Software: | x               |                                        | 30570.059  | $\sigma_x/y$ | 0.030            |
|                            | y               |                                        | 385451.017 |              |                  |
|                            | z               |                                        | 4.630      | $\sigma_z$   | 0.023            |
| Verschillen:               | $\Delta x$      | 0.026 m                                | Voldoet:   | JA           | Eis $\Delta$ max |
|                            | $\Delta y$      | 0.021 m                                | Voldoet:   | JA           | 0.05 m           |
|                            | $\Delta z$      | -0.015 m                               | Voldoet:   | JA           | 0.05 m           |
|                            |                 |                                        |            |              | 0.05 m           |

### Stap 2: Inmeten Scheepsas mbv GNSS-RTK

|                    |        |  |            |               |       |
|--------------------|--------|--|------------|---------------|-------|
| Ingemeten as boeg: | x boeg |  | 30569.561  | $\sigma_{XY}$ | 0.018 |
|                    | y boeg |  | 385445.564 | $\sigma_Z$    | 0.024 |
|                    | z boeg |  | 2.934      |               |       |

|                                  |                     |               |          |            |                  |           |                    |                 |              |       |
|----------------------------------|---------------------|---------------|----------|------------|------------------|-----------|--------------------|-----------------|--------------|-------|
| Ingemeten as aft:                | x aft               | 30568.494     |          |            |                  |           | $\sigma_{XY}$ :    | 0.017           |              |       |
|                                  | y aft               | 385459.918    |          |            |                  |           | $\sigma_Z$ :       | 0.022           |              |       |
|                                  | z aft               | 2.300         |          |            |                  |           |                    |                 |              |       |
| Ingemeten afstand naar ref.punt: |                     | 0.02          | m vanaf: | boeg/aft   |                  |           |                    |                 |              |       |
| Acquisitiewaarde Software:       | Gyrohoek:           | 176.1279 °    |          |            |                  |           | $\sigma_{gyro}$ :  | 0.1502 °        |              |       |
|                                  | Pitch               | -0.0673 ° BU+ |          |            |                  |           | $\sigma_{pitch}$ : | 0.1854 °        |              |       |
|                                  | x                   | 30568.50      |          |            |                  |           |                    | $\sigma_{XY}$ : | 0.021        |       |
|                                  | y                   | 385460.02     |          |            |                  |           |                    |                 | $\sigma_Z$ : | 0.023 |
|                                  | z                   | 2.30          |          |            |                  |           |                    |                 |              |       |
|                                  | Berekende gyrohoek: |               | 175.7488 | correctie: | 0                | Gyrohoek: | 175.7488           |                 |              |       |
| Verschillen:                     | $\Delta$ gyro       | 0.3791 °      | Voldoet: | JA         | Eis $\Delta$ max |           |                    |                 |              |       |
|                                  | 0.05 Statisch       |               |          |            |                  |           |                    |                 |              |       |
|                                  | 0.5 dynamisch       |               |          |            |                  |           |                    |                 |              |       |

Stap 3: Inmeten referentiepunt

Inmeting / Berekening referentiepunt:

|              | Gemeten met hoge SD | Berekend  | SD berekend |                 |                  |
|--------------|---------------------|-----------|-------------|-----------------|------------------|
| x            | 30568.47            | 30568.58  | 0.025       | $\sigma_{XY}$ : | 0.045            |
| y            | 385460.02           | 385459.99 |             | $\sigma_Z$ :    | 0.055            |
| z            | 2.31                | 2.31      | 0.033       |                 |                  |
| Verschillen: | $\Delta x$          | 0.03 m    | Voldoet:    | JA              | Eis $\Delta$ max |
|              | $\Delta y$          | -0.01 m   | Voldoet:    | JA              | 0.05 m           |
|              | $\Delta z$          | -0.01 m   | Voldoet:    | JA              | 0.05 m           |
|              |                     |           |             |                 | 0.05 m           |

Stap 4: Controle geluidssnelheidsensoren

Controle SVP

|                          |            |                      |            |
|--------------------------|------------|----------------------|------------|
| Gemeten geluidssnelheid: | 1455.6 m/s | SV Probe Valeport    | Zoet water |
| Gemeten geluidssnelheid: | 1487.7 m/s | Probe bij transducer | Zout water |

Berekening geluidssnelheid:

|                             |        |
|-----------------------------|--------|
| Berekening geluidssnelheid: |        |
| WGS84 Coordinates:          |        |
| N                           | 51.4 ° |
| E                           | 3.6 °  |
| H (approx.)                 | 45.6 m |
| Measured water temperature: | 12 °C  |
| Measured Salinity:          | 0 ppt  |
| Measurement depth:          | 1 m    |

Calculations as described in IHO Manual on Hydrography, 1st ed. May 2005

|             |            |             |
|-------------|------------|-------------|
| Parameters: | T          | 12.0 °C     |
|             | S          | 0.0 ppt     |
|             | Z          | 0.001001 km |
|             | $\Delta Z$ | 0.000000    |

Calculated Sound Velocity (C): **1455.0** m/s

Sound Velocity Probe in zout water (C): **1487.1** m/s

|              |            |          |          |    |                      |
|--------------|------------|----------|----------|----|----------------------|
| Verschillen: | $\Delta x$ | 0.60 m/s | Voldoet: | JA | Probe bij transducer |
| Verschillen: | $\Delta y$ | 0.63 m/s | Voldoet: | JA | SV Probe Valeport    |

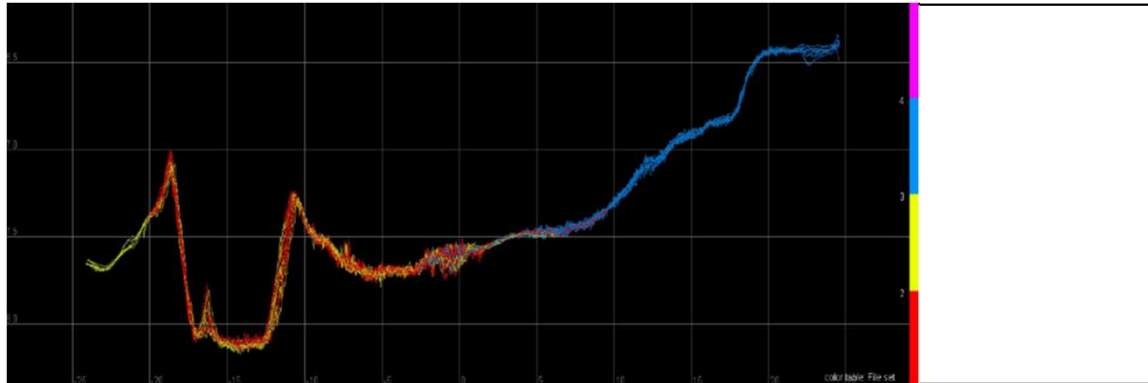
Stap 5: Controle bootgeometrie

Gemeten waarden patch test:

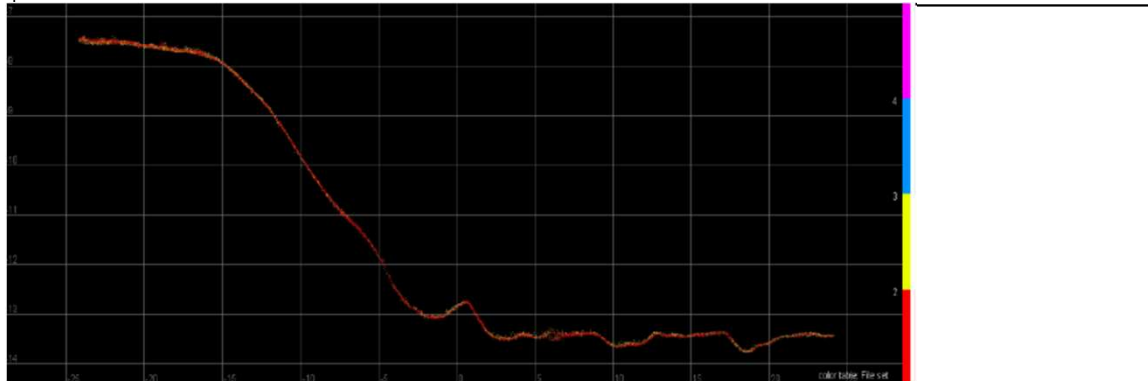
|                | Pre patchtest | Post patchtest | Verschillen |
|----------------|---------------|----------------|-------------|
| $\Delta$ roll  | -0.1 °        | -0.04 °        | 0.06 °      |
| $\Delta$ pitch | 1.34 °        | 0.5 °          | -0.84 °     |
| $\Delta$ yaw   | -1.32 °       | -1.49 °        | -0.17 °     |

Screenshots:

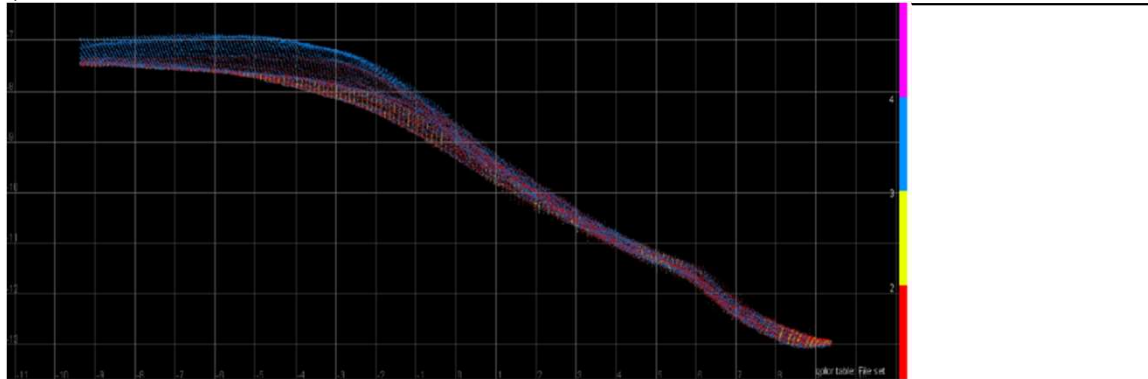
roll



pitch



yaw



Stap 6: Relatieve en absolute controle

Hoogte sluisdrempel via RWS: N.A.P. -8.5 m

Waterstand: N.A.P. 0.84 m

Berekende relatieve hoogte: WS 9.34 m

Diepte transducer t.o.v. wl: 1.05 m

Gemiddelde gemetenwaarde: N./ Rel. MBES 8.27 m

Gemiddelde gemetenwaarde: N.A.P. -8.50 m

verschil: Relatief: -0.02 m

Absoluut: 0.00 m

Voldoet: JA

Voldoet: JA

Els  $\Delta$  max

0.05 m

0.05 m

Screenshots:

Bathymetrie:



Standaarddeviatie:



**Checklist vraagspecificatie**

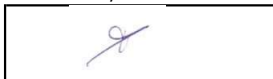
| Vraagspec              | art.          | omschrijving                                                 | Ja                                  | Nee                                 |
|------------------------|---------------|--------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Proces                 | 4.2.3         | Personen aanwezig welke ingezet worden voor de werkzaamheden | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Proces                 | 4.2.3         | Opdrachtgever tijdig ingelicht (5 werkdagen)                 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Proces                 | 4.2.3         | Dagelijkse procedure met OG getoond                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Proces                 | 4.2.3         | Digitale data meegenomen door OG                             | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Proces+Bijlage<br>n 1e | 4.2.4 + 2.1.4 | Peilingen uitgevoerd conform IHO NL norm A (on-line filters) | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Proces                 | 7.1.3.2       | OG aanwezig voor afname procestoets                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Proces                 | 7.1.3.4       | Afwijkingen t.o.v plannen geconstateerd, zo ja welke:        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                        |               | -                                                            |                                     |                                     |
|                        |               | -                                                            |                                     |                                     |
|                        |               | -                                                            |                                     |                                     |
|                        |               | -                                                            |                                     |                                     |
| Bijlagen 1e            | 2.1.4         | Toonbaar hitcount/meetcel (1x1 m) > 10                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Bijlagen 1e            | 2.1.4         | Plaatsbepaling middels (GNSS-)RTK                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

**Algemene checklist**

|                                                                           |                                     |                          |
|---------------------------------------------------------------------------|-------------------------------------|--------------------------|
| Positioneringscontrole uitgevoerd secundair systeem                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Positioneringscontrole uitgevoerd meetconfiguratie                        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Headingcontrole uitgevoerd                                                | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Positie reference point uitgevoerd (doorberekening punt heading controle) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Geluidssnelheidsmeter gecontroleerd                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Patchtest uitgevoerd                                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Relatieve dieptecontrole uitgevoerd                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Absolute dieptecontrole uitgevoerd                                        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                                                                           | <input type="checkbox"/>            | <input type="checkbox"/> |
|                                                                           | <input type="checkbox"/>            | <input type="checkbox"/> |

Acceptatietoets geaccepteerd: Ja/~~Nee~~

Paraaf Surveyor



Datum: 24-11-2020