



KONGSBERG
SIMRAD

DYNAMIC POSITIONING CONFERENCE HOUSTON, OCTOBER 21 - 22, 1997

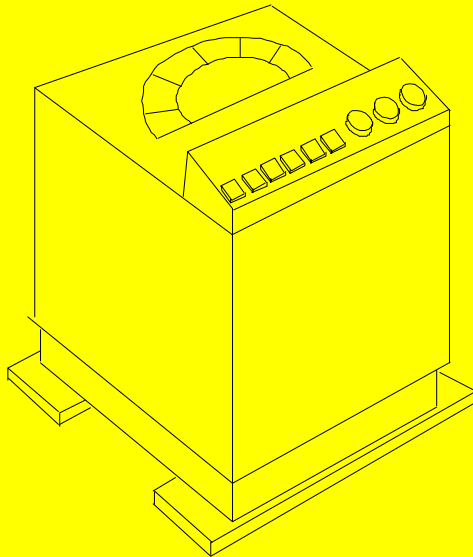
**BY ASMUND HENRIKSEN
KONGSBERG SIMRAD AS**

- **GYRO COMPASS,**
- **ELECTRICAL RISER ANGLE (ERA),**
- **TAUT WIRE**
 - The nature of the signals, interfacing and how they are applied in the Kongsberg Simrad Dynamic Positioning Systems.
 - Experience.



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GYRO COMPASS



COMPLIANCE WITH IMO RESOLUTION 424 (XI)



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GYRO COMPASS

- ***UPDATE RATE: 1 SECOND***
- ***NORTH RELATIVE MEASUREMENTS***
- ***RS 232C SERIAL LINE NMEA 0183 FORMAT
OR SYNCHRO (400 HZ)***
- ***ALARM SIGNAL***
- ***AUTOMATIC SPEED AND LATITUDE
CORRECTION***



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GYRO COMPASS

- ***PART OF NAVIGATION EQUIPMENT SET-UP***
- ***MANY MAKERS AND TYPES***



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GYRO COMPASS

- ***FED TO ALL DP CONTROLLERS***
- ***TWO COMPASSES: COMPARISON CHECK***
- ***THREE COMPASSES: MAJORITY VOTING =
MEDIAN VALUE***



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GYRO COMPASS

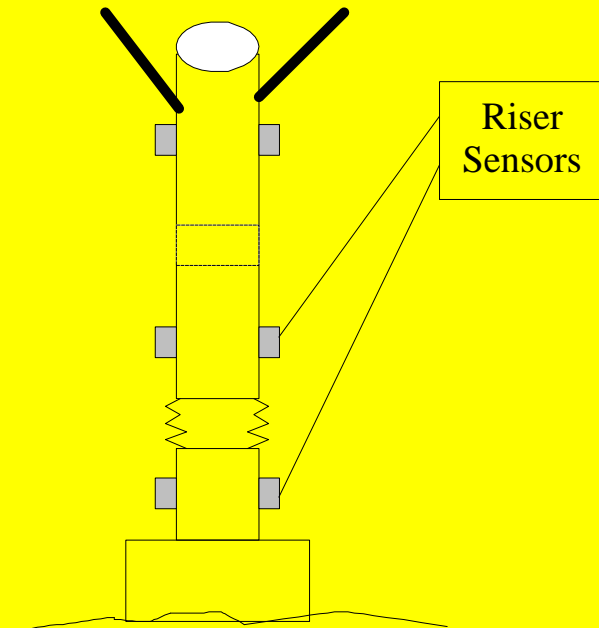
EXPERIENCE:

- ***FOR NORMAL DP OPERATION COMPASSES
COMPLYING WITH IMO RESOLUTION 424 (XI)
PROVIDE SATISFACTORY ACCURACY AND RESPONSE***



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RISER ANGLE (ERA)





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RISER ANGLE (ERA)

- ***RS 232C OR ANALOGUE OUTPUT***
- ***ANGLE TRANSFORMATION TO N/E COORDINATES***
- ***UPDATE RATE: 1 SECOND***



RISER ANGLE (ERA)

- ***PREDICTION OF ZERO-ANGLE-POSITION
- A “CARROT-FUNCTION”***
- ***ADVISORY BASED ON STRAIGHT LINE
ASSUMPTION***
- ***RISER ANGLE ALARM LIMIT***



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RISER ANGLE (ERA)

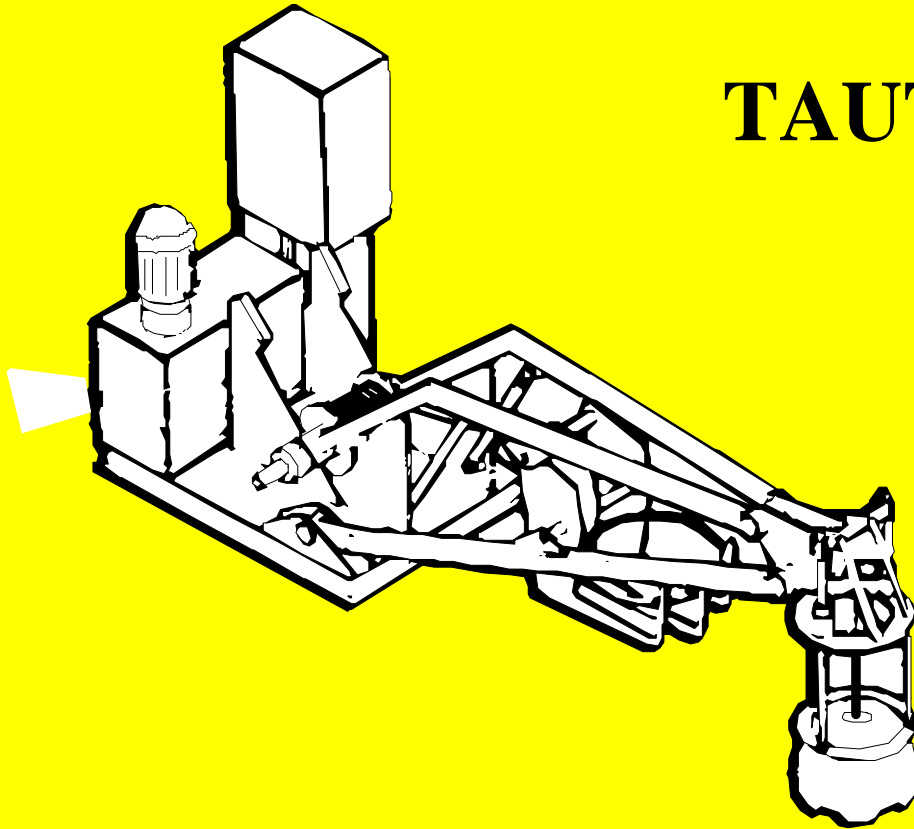
EXPERIENCE:

- ***UNRELIABLE AS POSITIONING REFERENCE SYSTEM
DUE TO:***
 - ***UNKNOWN RISER PROFILE***
 - ***LONG RESPONSE TIME (MINUTES)***



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TAUT WIRE





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TAUT WIRE

- *MECHANICAL SYSTEM - SIMPLE AND ROBUST*
- *LIMITED ALLOWANCE FOR POSITION AND HEADING CHANGES*
- *UNLINEAR SCALE VERSUS ANGLE DUE TO WIRE PROFILE*
- *DEPTH LIMITATION*



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TAUT WIRE

- ***ANALOGUE OUTPUT, ATHWARTSHIP AND ALONGSHIP COORDINATES***
- ***ALARM AND ANGLE LIMIT SIGNALS***
- ***ROLL AND PITCH COMPENSATION***
- ***TRANSFORMATION TO NORTH/EAST COORDINATES***



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ADVANTAGES:

- ***SIMPLE AND ROBUST SYSTEM***
- ***LOW NOISE SIGNALS***



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DISADVANTAGES:

- ***LIMITED ALLOWANCE FOR POSITION AND HEADING CHANGES***
- ***WIRE PROFILE AFFECTED BY ANGLE AND CURRENT***
- ***UNLINEAR SCALE VERSUS ANGLE***
- ***DEPTH LIMITATION***



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EXPERIENCE:

- ***RELIABLE TO 500 METERS W.D. WITH FILTER***
- ***REQUIRE PERIODIC MAINTENANCE***