**INTEQ gyro models**

**Inputs to the “ISCWSA” format model, per SPE 90408**

**1. Seeker error model**

**Error term grou**p **Class** **Used** **Parameters/Definitions**

**XY Accelerometer** **GEN** **Yes** *cant angle* = **0°**, *Switching* = **No**

**XY Stationary Gyro** **STAT** **Yes** *start\_inc* = **0°**, *end\_inc* = **80°**, *init\_inc* =

**Tool Misalignment** **GEN** **Yes** **Alt. 3**

**Depth** **GEN** **Yes**

**XY Accelerometer (GEN)**

**Error term** **Mode** **Value**

*xy* accelerometer bias R .01 m/s2

Accelerometer scale factor error S .0005

Accelerometer misalignment S 0

Gravity bias S .004 m/s2

**XY Stationary Gyro (STAT)**

**Error term** **Mode** **Value**

*xy* gyro bias 1 S 0

*xy* gyro bias 2 S 0

*xy* gyro random noise R .02 deg/hr

*xy* gyro g-dept error 1 S .07 deg/hr/g

*xy* gyro g-dept error 2 S 0

*xy* gyro g-dept error 3 S 0

*xy* gyro g-dept error 4 S .07 deg/hr/g

Gyro scale factor error S .002

Gyro misalignment S 0

**Tool Misalignment (GEN)**

**Error term** **Mode** **Value**

*xy* Misalignment 1 S .05 deg

*xy* Misalignment 2 S .05 deg

*xy* Misalignment 3 S .1 deg

*xy* Misalignment 4 S .1 deg

Vertical Sag S .05 deg

**Depth (GEN)**

**Error term** **Mode** **Value**

Depth Random Error R 0

Depth Systematic Reference S .2 m

Depth Scale S 1.5.E-3

Depth Stretch-type G 2.E-7 m-1

**1. Seeker error model (corrections and applications)**

**Available corrections : Effect**

**DLS** Removes the DLS term (see Note 1)

**Available applications (see Note 2):**

**Application Situation Effect**

**Drillpipe** Tool run inside drillpipe *xy* Misalignment terms are increased by 50%

**Bent sub** Run above bent sub Vertical Sag = 0,

all *xy* Misalignments set to 0.5 deg

**Single shot** Depth tied to drillpipe Depth random error = 0.35 m,

Depth systematic reference = 0,

Depth scale = 6.0E-4 propagating globally, Depth stretch-type = 2.2E-7 m-1

**Floater** Tool run on floating rig Depth random error = 2.2 m,

 Depth systematic reference = 1 m

**2. RIGS error model**

**Error term grou**p **Class** **Used** **Parameters/Definitions**

**XYZ Accelerometer** **GEN** **Yes**

**XYZ Stationary Gyro** **STAT** **Yes** *start\_inc* = **0°**, *end\_inc* = **0°**, *init\_inc* = **-1**

**XYZ Continuous Gyro** **CONT** **Yes** *start\_inc* = **0°**, *end\_inc* = **180°**,

*running\_speed* = **1 m/s**

**Tool Misalignment** **GEN** **Yes** **Alt. 3**

**Depth** **GEN** **Yes**

**Minimum distance between** **Noise reduction factor at**

**initializations = 9999 m** **initialization = 1.0**

**XYZ Accelerometer (GEN)**

**Error term** **Mode** **Value**

*xy* accelerometer bias S 0.002 m/s2

*z* accelerometer bias S 0.002 m/s2

Accelerometer scale factor error S 0.0002

Accelerometer misalignment S 0.002 deg

**XYZ Stationary Gyro (STAT)**

**Error term** **Mode** **Value**

*xy* gyro bias 1 S 0.0035 deg/hr

*xy* gyro bias 2 S 0.0035 deg/hr

*xy* gyro random noise R 0.0086 deg/hr

*xy* gyro g-dept error 1 S 0

*xy* gyro g-dept error 2 S 0

*xy* gyro g-dept error 3 S 0

*xy* gyro g-dept error 4 S 0

*z* gyro bias S 0.0035 deg/hr

*z* gyro random noise R 0.0086 deg/hr

*z* gyro g-dept error 1 S 0

*z* gyro g-dept error 2 S 0

Gyro scale factor error S 1.E-5

Gyro misalignment S 0.021 deg

**XYZ Continuous Gyro (CONT)**

**Error term** **Mode** **Value**

*xyz* Gyro drift S 0.01 deg/hr

*xyz* Gyro random walk S 0.01 deg/√hr

**2. RIGS error model (continued)**

**Tool Misalignment (GEN)**

**Error term** **Mode** **Value**

*xy* Misalignment 1 S 0.0125 deg

*xy* Misalignment 2 S 0.0125 deg

*xy* Misalignment 3 S 0.025 deg

*xy* Misalignment 4 S 0.025 deg

Vertical Sag S 0.05 deg

**Depth (GEN)**

**Error term** **Mode** **Value**

Depth Random Error R 0

Depth Systematic Reference S 0.1m

Depth Scale S 2.5E-4

Depth Stretch-type S 7.E-8 m-1

**Available applications :**

**Application Situation Effect**

**Floater** Tool run on floating rig Depth random error = 2.2 m,

 Depth systematic reference = 1 m

**3. FINDS error model**

**Error term grou**p **Class** **Used** **Parameters/Definitions**

**Tool Misalignment** **GEN** **Yes** **Alt. 3**

**Depth** **GEN** **Yes**

**Tool Misalignment (GEN)**

**Error term** **Mode** **Value**

*xy* Misalignment 1 S 0.029 deg

*xy* Misalignment 2 S 0.029 deg

*xy* Misalignment 3 S 0.029 deg

*xy* Misalignment 4 S 0.029 deg

Vertical Sag S 0

**Depth (GEN)**

**Error term** **Mode** **Value**

Depth Random Error R 0

Depth Systematic Reference S 0

Depth Scale S 5.0E-4

Depth Stretch-type S 0