Centre Name		Centre Number	
Simulator Name		Current Status	
Manufacturer		Contact name	

A copy of this form must be submitted for each simulator model proposed for approval at primary or additional locations.

- The simulation environment must consist of a number of display screens capable of displaying the appropriate instrumentation, switches or operating controls required by the Level 3 candidate and/or Level 4 candidate during each step of the '*IWCF Practical Assessment Exercise'*.

- A display screen is defined as a place where a person performs <u>one or more</u> activities in relation to a well control scenario. This will range from 'initial set-up' for drilling to the 'evacuation of the influx' as required by the IWCF Practical Assessment Exercise methodology. A candidate may have to access a number of displays to carry out various operations.

<u>Unless otherwise stated in this document the following rules will apply to all display components</u>:

- Gauges and meter displays may be of the analogue or digital meter type.

- Analogue gauge and digital meter displays must have a minimum internal diameter capable of being accurately read by the candidates being assessed.

- Operational controls may simulate push buttons or levers (resembling electric or air operated systems respectively).

For Subsea BOP Stack Assessments: -

- A Subsea BOP stack display must be used instead of a Surface BOP display.

- A Kill Line pressure gauge must be included in the simulator, capable of being accurately read by the Level 4 Candidate while conducting the well kill operation.

The following checklist covers the minimum required to successfully perform an IWCF L3 and/or L4 assessment. Remote simulators may be capable of a greater number of operations that are not covered in the IWCF assessment; such functionality will not be included in this checklist.

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Describe the functions of your simulator model by checking either the 'Yes or No' boxes in the following tables.

1. Driller's Display Screens		
The Driller's display screens will be used to initiate and observe the following activities. (More than one display may be used for these activities): -		
1.1. Drilling ahead by use of a draw-works control.	Y	N
1.2. Monitoring Hook load.	Y	N
1.3. Applying Weight on bit.	Y	N
1.4. Control of mud pumps (two pumps minimum are required).	Y	N
1.5. Monitoring Pump speed.	Y	N
1.6. Monitoring Pump pressure.	Y	N
1.7. Applying and monitoring RPM	Y	N
1.8. Monitoring Pit deviation.	Y	N
1.9. Adjust and monitor Pit, flow and trip tank alarms (high and low) and activate audible and visual alarm.	Y	N
1.10. Monitor Return flow.	Y	N
1.11. Monitor Trip tank, line up trip tank and operate Trip Tank Pump	Y	N
1.12. Rate of penetration (ROP) Indicator.	Y	N
1.13. Line up the Standpipe manifold for drilling and well control operations. The system must be an integral part of the simulator operation. It will have as a minimum; two pump discharge lines feeding in parallel to a standpipe manifold with a single standpipe. Pressure sensing devices will be located in correct position/s to monitor pressures according to line-up	Y	N
1.14. Line up the Choke manifold for drilling and well control operations. The system must consist of at least two chokes, one of which will be operable from the "Remote Choke Control" display. A vent line (also called a by-pass or bleed line) that bypasses the chokes is optional. Pressure sensing devices will be located in correct position/s to monitor pressures according to well control operation.	Y	N

2. Surface BOP Stack Display Screen		
This display must resemble a Surface "BOP Control Panel" where the following activities can be initiated and observed:		
2.1. Master Control. (Simulated 'Push to Operate' switch or lever)	Y	N
2.2. Annular Control. (At least one Annular Preventer)	Y	N
2.3. Ram Control. (At least three Rams, one of which will be a Blind or Blind/Shear type)	Y	N
2.4. Choke and kill line valve control (at least one choke valve and one kill valve).	Y	N
2.5. Annular pressure and Manifold pressure regulator controls.	Y	N
2.6. Flowmeter to accumulate the volume(s) used to activate functions.	Y	N
2.7. Air, Accumulator, Manifold and Annular pressure indicators that are integral to the system and monitor the hydraulic control unit.	Y	N

3. Subsea BOP Stack Display Screen (Mandatory for Combined Surface/Subsea BOP Stack Assessments)

This display must resemble a Subsea "BOP Control Panel" where the following activities can be initiated and observed (Push button type panel to mimic electric operations):

	Y	N
3.1. Master Control (Push to operate button).	Y	N
3.2. Annular Control with Block function (at least one Annular Preventer).	Y	N
3.3. Ram Controls with Block function, (at least three rams one of which will be a Blind/Shear type).	Y	N
3.4. Choke and Kill Line valve control (at least one choke line and one kill line that are piped into different ram cavities). Both choke line valve and kill line valve to have Block function.	Y	N
3.5. Annular Regulator and Manifold Regulator Pilot control.	Y	N
3.6. Air, Accumulator, Manifold and Annular read back gauges that are integral to the system and monitor the hydraulic control unit.	Y	N
3.7. Flowmeter to accumulate the volume(s) used to activate functions.	Y	N
3.8. Open, Close and Block lights to show position of function prior to block. (If the ram locking system is installed on the Subsea BOP Panel – it must be operational).	Y	N

4. Remote Choke Display Screen

This panel/display must resemble a **Remote Choke Console** where the following activities can be initiated and observed: -

	Y	N
4.1. Drill pipe and Casing pressure gauges must be capable of being accurately read. For Subsea BOP stack assessment, a kill line pressure gauge next to the console must be capable of being accurately read.	Y	N
4.2. Pump speed indicator (SPM).	Y	N
4.3. Total stroke counter and reset switch.	Y	N
4.4. Simulated Choke control handle.	Y	N
4.5. Choke position indicator.	Y	N
4.6. Choke operation speed control.	Y	N

5. Data Recording Requirements

System capable of recording, and printing, a continuous plot (graph) of key data, scalable over time, as listed below, during the period leading up to a kick and throughout the kill operation: - (* mandatory for graph plotting as per PA Handbook).

	Y	N
5.1. During drilling: -		
5.1.1. Bottom hole pressure. *	Y	N
5.1.2. Pore pressure/formation pressure. *	Y	N
5.1.3. SPM.	Y	N
5.1.4. Drill pipe Pressure. *	Y	N
5.1.5. Pit Gain or Loss or Active Pit Volume. *	Y	N
5.2. During well control: -		
5.2.1. Bottom hole pressure. *	Y	N
5.2.2. Strokes or volume pumped.	Y	N
5.2.3. Pore pressure/formation pressure. *	Y	N
5.2.4. Choke position.	Y	N
5.2.5. Pit Gain or Loss or Active Pit Volume. *	Y	N
5.2.7. SPM.	Y	N

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	Y	N
5.2.8. Drill pipe pressure. *	Y	N
5.2.9. Casing pressure. *	Y	N
5.2.10. Casing shoe pressure.	Y	N

5.3. The Assessor and Candidate name(s) and exercise date must be entered in the Simulator prior to commencement of the Exercise and printed on the recorded plot (graph) at the end of the exercise.
5.4 The original printed plot (graph) showing at least the Drillpipe Pressure, Casing Pressure, Formation Pressure, Bottom Hole Pressure and Pit Level (all against time), must be signed by the Candidate(s) and the Assessor, and submitted to IWCF with the Candidate registration form.
5.5. A copy of the printed plot (graph) must be retained with the candidate records at the Assessment Centre.
5.6. The candidate(s) being tested may only see or discuss the key data with the Assessor on completion of the exercise.

6. Software Requirements

The System software must be capable of simulating the following activities: -

	Y	N
6.1. Drilling ahead, drilling breaks and taking an influx.	Y	N
6.2. Wait & Weight Method.	Y	N
6.3. Driller's Method.	Y	N
6.4. Trip Tank level change during a positive flow check and leaking BOP	Y	N
6.5. Fluid drain-back along flow line and back to pits.	Y	N
6.6. Surface line volume from mud pump to Standpipe	Y	N
6.7. Use of an inside BOP. (non-return type valve)	Y	N
6.8. Run exercises with vertical well geometry and reflect the changes in mud weight, pressure and choke responses, bottom hole and casing shoe pressures that occur during well control operations.	Y	N

7. Failure and Problem Capability

The Simulator must be capable of modelling the following problems and failures: -

	Y	N
7.1. Annular or Ram BOP Failure or Leak, while shutting in the well following a kick.	Y	N
7.2. Total pump failure, discontinuity of power to pump(s) in use or blown pop-off valve.	Y	N
7.3. Plugged bit nozzle, plugging of one or more nozzles.	Y	N
7.4. Choke washout, a marked change in choke setting.	Y	N
7.5. Plugged choke, sudden pressure increase resulting from partial plugging.	Y	N

8. Assessment Environment		
8.1. Assessor must have ability to observe the display screens used by the Driller and Supervisor using the assessor's computer/s.	Y	N
8.2. In an Assessment Exercise, the Level 3 candidate must be able to operate the Pump while the Level 4 candidate operates the Choke.	Y	N
8.3. Candidates must not have access to any of the assessor-only screens	Y	N
8.4. Units of measurement for gauges and meters will be at the discretion of the simulator owner, but must be consistent for all functions	Y	N
8.5. Rig floor noises may be included in the exercises, if they are available on the simulation equipment.	Y	N

Authorised Assessment Centre Representative: -

As an authorised officer of the above company I confirm that, to the best of my knowledge, the information given on this form is correct.

Name		Position	
Signature		Date	

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