

CLAIMS:

1. A method of monitoring the operation of a subsea hydrocarbon production control system, the method comprising monitoring at least one subsea device of the system and, if the device fails to a fail-safe condition, sending an indication of that by wireless.
2. A method according to claim 1, wherein said indication is sent to a fail-safe monitoring unit.
3. A method according to claim 2, wherein said unit is a subsea unit.
4. A method according to claim 3, wherein said subsea unit is in a subsea power distribution and protection module.
5. A method according to any preceding claim, wherein the at least one device comprises at least one of a valve and an actuating mechanism for a valve.
6. A method according to any preceding claim, wherein the indication is sent from fail-safe monitoring means at a tree of the system with which the device is associated.
7. A method according to claim 6, wherein the system has at least one further such tree from which, if a device associated with it, fails to a fail-safe condition, an indication to that effect is sent by wireless from fail-safe monitoring means of the further tree.
8. A subsea hydrocarbon production control system, comprising means for monitoring at least one subsea device of the system and means for, if the device fails to a fail-safe condition, sending an indication of that by wireless.
9. A system according to claim 8, wherein, in use of the system, said indication is sent to a fail-safe monitoring unit of the system.
10. A system according to claim 9, wherein said unit is a subsea unit.
11. A system according to claim 10, wherein said subsea unit is in a subsea power distribution and protection module.
12. A system according to any of claims 8 to 11, wherein the at least one device comprises at least one of a valve or an actuating mechanism for a valve.
13. A system according to any of claims 9 to 12, wherein, in use of the system, the indication is sent from fail-safe monitoring means at a tree of the system with which the device is associated.
14. A system according to claim 13, wherein the system has at least one further such tree from which, if a device associated with it, fails to a fail-safe condition, an indication to that effect is sent by wireless from fail-safe monitoring means of the further tree.

Claims

1. A method of monitoring the operation of a subsea hydrocarbon production control system, the method comprising monitoring at least one subsea device of the system and, if the device fails to a fail-safe condition by the execution of a fail-safe mechanism, sending an indication of that, characterised in that said indication is sent by wireless from a fail-safe monitoring module provided with a subsea wireless link (14), and in that the method comprises checking the output from the fail-safe monitoring module (9) with an associated sensor package (15) and checking the output from a subsea electronics module (8) with an associated sensor package (16) which receives process instrumentation signals from sensors mounted on a tree and at the wellhead, wherein when the sensor signals feeding the subsea electronics module result in it triggering the fail-safe mechanism, a check is made against the output from the fail-safe monitoring module to see if this has also triggered the fail-safe mechanism.
2. A method according to claim 1, wherein said indication is sent to a fail-safe monitoring unit (13).
3. A method according to claim 2, wherein said unit (13) is a subsea unit.
4. A method according to claim 3, wherein said subsea unit is in a subsea power distribution and protection module (2).
5. A method according to any preceding claim, wherein the at least one device comprises at least one of a valve and an actuating mechanism for a valve.
6. A method according to any preceding claim, wherein the indication is sent from fail-safe monitoring means at a tree (6) of the system with which the device is associated.

7. A method according to claim 6, wherein the system has at least one further such tree from which, if a device associated with it, fails to a fail-safe condition, an indication to that effect is sent by wireless from fail-safe monitoring means of the further tree.
8. A subsea hydrocarbon production control system, comprising means for monitoring at least one subsea device of the system and means (11) for, if the device fails to a fail-safe condition by the execution of a fail-safe mechanism, sending an indication of that, characterised in that said monitoring means comprises a fail-safe monitoring module (9) with an associated sensor package (15) used in conjunction with a subsea electronics module (8) with an associated sensor package (16) which receives process instrumentation signals from sensors mounted on a tree and at the wellhead, wherein the system includes means so that when the sensor signals feeding the subsea electronics module result in it triggering a the fail-safe mechanism, a check is made against the output from the fail-safe monitoring module to see if this has also triggered the fail-safe mechanism, and in that said fail-safe monitoring module (9) is provided with a subsea wireless link (14) and said indication is sent by wireless.
9. A system according to claim 8, wherein, in use of the system, said indication is sent to a fail-safe monitoring unit (13) of the system.
10. A system according to claim 9, wherein said unit (13) is a subsea unit.
11. A system according to claim 10, wherein said subsea unit is in a subsea power distribution and protection module (2).
12. A system according to any of claims 8 to 11, wherein the at least one device comprises at least one of a valve or an actuating mechanism for a valve.

13. A system according to any of claims 9 to 12, wherein, in use of the system, the indication is sent from fail-safe monitoring means at a tree (6) of the system with which the device is associated.
14. A system according to claim 13, wherein the system has at least one further such tree from which, if a device associated with it, fails to a fail-safe condition, an indication to that effect is sent by wireless from fail-safe monitoring means of the further tree.