CLAIMS:

1. A wireline sheave apparatus comprising:

a sheave for accommodating a wireline;

a sheave mounting configured for coupling to a wireline stuffing box, the sheave being mounted on the sheave mounting; and

a sensor for measuring ~~at least one of~~ wireline tension ~~and deployed wireline length~~ at the sheave,

wherein the sheave mounting comprises a frame which is in at least two frame parts, the frame parts being arranged to pivot relative to one another, and

wherein the sensor is provided between the frame parts so as to measure parameters indicative of forces acting on the wireline.

2. The apparatus of claim 1, comprising a~~including~~ sensor~~s~~ for measuring deployed~~both wireline tension and~~ wireline length at the sheave.

3. The apparatus of ~~any preceding~~ claim 1 or 2, ~~wherein the apparatus~~ includinge~~s~~ a transmitter for relaying information gathered by the sensor for measuring wireline tension and/or by the sensor for measuring deployed wireline length~~.~~

~~4. The apparatus of claim 3~~, and~~in combination with~~ a wireline control unit configured to receive and process said information.

4~~5~~. The apparatus of claim 3~~4~~, wherein the wireline control unit is configured to record or display said~~gathered~~ information.

5~~6~~. The apparatus of ~~any of~~ claims 3~~, 4~~ or 4~~5~~, wherein the transmitter is configured to wirelessly relay the information ~~wirelessly~~.

~~7. The apparatus of any of claims 3 to 6, wherein the transmitter is a radio frequency transmitter.~~

6~~8~~. The apparatus of any preceding claim, configured for measuring wireline speed.

7. The apparatus of any preceding claim, including one or more sensors configured to measure one or more of sheave rotation and sheave rotation direction.

8. The apparatus of claim 7, wherein said one or more sensors include at least one of a mechanical counter, encoder and electromagnetic speed sensor.

9. The apparatus of any preceding claim, wherein the apparatus is configured to communicate with pressure sensors and the apparatus is further configured for transmitting signals received from the pressure sensors to a receiver.

10. The apparatus of ~~any preceding~~ claim 9, wherein the ~~apparatus is configured to communicate with~~ pressure sensors are provided in a lubricator assembly.

11. The apparatus of any preceding claim, comprising one or more pressure sensors configured for measuring at least one of stuffing box pressure and well pressure.

12. The apparatus of any preceding claim, including a swivel for coupling to a stuffing box.

~~13. The apparatus of any preceding claim, in combination with a stuffing box or lubricator string.~~

~~14. The apparatus of claim 12 or 13, configured such that wireline extending between the sheave and the stuffing box is axially aligned with the wireline passing through the stuffing box.~~

~~15. The apparatus of any preceding claim, in combination with a lubricator string including pressure sensors for providing at least one of well pressure and stuffing box hydraulic pressure information.~~

~~16. The apparatus of any preceding claim, in combination with a wireline.~~

13~~17~~. The apparatus of any preceding claim, ~~wherein the apparatus is~~ configured such that wireline used in combination with the apparatus experiences less than eleven bending cycles between a wireline reel and a lubricator.

14~~18~~. The apparatus of any preceding claim, wherein the sheave is configured to guide wireline from a bottom hay pulley into the top of a lubricator and into a well.

15~~19~~. The apparatus of any preceding claim, configured such that the sheave contact angle with the wireline is maintained substantially constant.

16~~20~~. The apparatus of any preceding claim, wherein the sheave contact angle is maintained at or around 180 degrees.

17~~21~~. The apparatus of any preceding claim, wherein the apparatus includes~~ing~~ wireline guides for maintaining a desired sheave contact angle.

18~~22~~. The apparatus of ~~any preceding~~ claim 17, wherein the guides comprise rollers.

1923. The apparatus of any preceding claim, wherein the sheave serves as a wireline length measuring wheel and has a calibrated outer diameter.

2024. The apparatus of any preceding claim, wherein the sheave includes a wire retaining arrangement to ensure that the wireline is maintained in contact with the sheave.

2125. The apparatus of claim 2024, wherein the wire retaining arrangement comprises spring-mounted rollers.

~~26. The apparatus of any preceding claim, wherein the sheave is frame-mounted.~~

~~27. The apparatus of any preceding claim, wherein the sheave mounting frame provides mounting for one or more sensors.~~

~~28. The apparatus of claim 27, wherein the frame is in more that one part and sensors are provided between the frame parts to measure parameters indicative of forces acting on the wireline.~~

2229. The apparatus of any preceding claim ~~27 or 28~~, including~~wherein~~ a strain gauge which is mounted on the frame and which is configurable to measure tension in the wireline ~~tension~~.

2330. The apparatus of claim 2229, wherein ~~parts of the frame are arranged to pivot relative to one another and~~ tension on the wireline tends to cause the parts of the frame to pivot~~,~~ and wherein the apparatus includes~~such that a strain gauge on~~ a load pin which prevents~~ing~~ the parts of the frame from pivoting and the strain gauge measures strain on the load pin so as to indicates tension in the wireline ~~tension~~.

2431. The apparatus of any preceding claim ~~29 or 30~~, including dual independent strain gauges.

2532. The apparatus of any of preceding claims ~~27 to 31~~, comprising a hydraulic load cell mounted on the frame.

~~33. The apparatus of any preceding claim, wherein the apparatus includes one or more sensors configured to measure one or more of sheave rotation and sheave rotation direction.~~

~~34. The apparatus of claim 33, wherein said sensors include at least one of a mechanical counter, encoder and electromagnetic speed sensor.~~

~~35. The apparatus of any preceding claim, in combination with a wireline unit and wherein the wireline unit is configured to process signals received from the sensors to provide depth figures which are accurate for the diameter of wireline being used, without requiring replacement of the sheave wheel.~~

~~36. The apparatus of claim 35, wherein the correction is achieved electronically using wireline length information and wireline diameter information.~~

~~37. The apparatus of any preceding claim, comprising an electronics module for processing information from the sensor.~~

~~38. The apparatus of claim 37, wherein the module is mounted on a sheave mounting bracket.~~

~~39. The apparatus of claim 37 or 38, wherein the module houses one or more of sensor amplifiers, power supply, batteries, transmitters and antenna.~~

~~40. The apparatus of any preceding claim, including an independent power source.~~

26~~41~~. The apparatus of any preceding claim, including a power source configured to be recharged through rotation of the sheave.

27~~42~~. The apparatus of claim 26~~41~~, wherein the power source comprises a battery arranged to be charged by a generator in an encoder and an energy harvesting module.

28~~43~~. A wireline work method comprising:

mounting a sheave on a sheave mounting comprising a frame which is in at least two frame parts, the frame parts being arranged to pivot relative to one another;

coupling the sheave mounting to a wireline stuffing box;

passing wireline around the sheave;

providing a sensor between the frame parts; and

using the sensor to measure~~ing at least one of~~ wireline tension ~~and deployed wireline length~~ at the sheave by measuring parameters indicative of forces acting on the wireline.

29~~44~~. A~~The~~ wireline work method as claimed in~~of~~ claim 28~~43~~, comprising measuring deployed wireline length at the sheave~~transmitting the measured information to a wireline control unit~~.

~~45. The method of claim 44, comprising transmitting the information wirelessly.~~

~~46. The method of claim 45, comprising transmitting the information at radio frequencies.~~

~~47. The method of any of claims 44 to 47, comprising communicating with pressure sensors in a lubricator assembly and transmitting information gathered by the pressure sensors with the measured information.~~

~~48. The method of claim 47, comprising measuring at least one of well pressure and stuffing box hydraulic pressure.~~

~~49. The method of any of claims 43 to 48, comprising using the sheave as a wireline length measuring wheel.~~

~~50. The method of any of claims 43 to 49, comprising pressing the wireline against the sheave.~~

~~51. The method of any of claims 43 to 50, comprising measuring wireline speed at the sheave.~~

~~52. The method of any of claims 43 to 51, comprising measuring forces between stuffing box sheave assembly parts to measure parameters indicative of forces acting on the wireline.~~

~~53. The method of any of claims 43 to 52, wherein a sheave contact angle with the wireline is maintained substantially constant to facilitate provision of accurate wireline tension information.~~

~~54. The method of any of claims 43 to 53, comprising measuring one or more of sheave rotation and sheave rotation direction.~~

~~55. The method of any of claims 43 to 54, comprising displaying and recording wireline depth and tension on an electronic display in an associated wireline unit.~~

~~56. The method of any of claims 43 to 55, comprising processing signals received from the sensors to provide depth figures which are compensated for the diameter of wireline being used.~~

~~57. The method of any of claims 43 to 56, comprising recharging a power source through rotation of the sheave.~~

~~58. The method of any of claims 43 to 57, comprising running wireline between a wireline reel and a lubricator, wherein the wireline experiences less than eleven bending cycles between the wireline reel and the lubricator.~~

~~59. A stuffing box sheave assembly including a sensor and a transmitter for transmitting signals from the sensor to a unit for storing or displaying information gained from said signals.~~

~~60. The assembly of claim 59, in combination with a receiver for receiving and processing said signals.~~

~~61. The assembly of claim 59 or 60, wherein the signals are transmitted wirelessly.~~

~~62. A wireline working method comprising transmitting signals obtained from a sensor operatively associated with a stuffing box sheave assembly to a wireline unit for storing or displaying information gained from said signals.~~

~~63. The method of claim 62, wherein the signals are transmitted wirelessly.~~