claims:

1. A subsea excavation apparatus comprising:
an excavator;
a first anchor point in a fixed location relative to the seabed;
a first subsea actuator attached to the excavator and the first anchor point for converting power to mechanical force between the first anchor point and the excavator;
a vertical actuator attached to the excavator for controlling force between the excavator and an excavation face;
wherein the first subsea actuator exerts force in response to actuator control signals.

2. The subsea excavation apparatus of claim 1 wherein the vertical actuator is attached to the excavator and a surface platform.

3. The subsea excavation apparatus of claim 1 wherein the first subsea actuator comprises a unidirectional actuator.

4. The subsea excavation apparatus of claim 1 wherein the first subsea actuator comprises a bidirectional actuator.

5. The subsea excavation apparatus of claim 1 wherein the first subsea actuator is responsive to actuator control signals to manage the location of the excavator on an excavation face.

6. The subsea excavation apparatus of claim 1 wherein the excavator is responsive to excavator control signals and the excavator control signals and actuator control signals are provided interdependently to manage excavation location and rate.

7. A subsea excavation apparatus comprising:
an excavator;
a first anchor point in a fixed location relative to the seabed;
a second anchor point in a fixed location relative to the seabed;
a third anchor point in a fixed location relative to the seabed;
a first subsea actuator attached to the excavator and the first anchor point for converting power to mechanical force between the first anchor point and the excavator;
a second subsea actuator attached to the excavator and the second anchor point for converting power to mechanical force between the second anchor point and the excavator;
a third subsea actuator attached to the excavator and the third anchor point for converting power to mechanical force between the third anchor point and the excavator;
wherein the first, second, and third subsea actuator exert force in response to actuator control signals.

8. The subsea excavation apparatus of claim 7 wherein the first, second, and third subsea actuators are responsive to actuator control signals to manage the location of the excavator on an excavation face in three dimensions.

9. A method for controlling a subsea excavator comprising:
providing a first anchor point at a fixed location relative to the seabed;
providing at least one subsea actuator;
providing power to at least one subsea actuator;
converting the power to at least one subsea actuator to a mechanical force with at least one subsea actuator;
applying the mechanical force from at least one subsea actuator between the subsea excavator and the plurality of anchor points;
providing a vertical actuator;
providing power to the vertical actuator;
converting the power to the vertical actuator to a mechanical force with the vertical actuator;
using the mechanical force from the vertical actuator to control force between the excavator and an excavation face;
providing actuator control signals to the at least one subsea actuator and the vertical actuator.

10. The method for controlling a subsea excavator of claim 9 wherein the actuator control signals control the force exerted by the at least one subsea actuator.

11. The method for controlling a subsea excavator of claim 9 wherein the actuator control signals are used to manage the location of the excavator on an excavation face.

12. The method for controlling a subsea excavator of claim 9 further comprising:
providing excavator control signals to the excavator.

13. The method for controlling a subsea excavator of claim 9 wherein the power is provided by a surface vessel.

14. The method for controlling a subsea excavator of claim 9 wherein the at least one subsea actuator comprises a unidirectional actuator.

15. The method for controlling a subsea excavator of claim 9 wherein the at least one actuator comprises a bidirectional actuator.

Claims:

1. A subsea excavation apparatus comprising:
an excavator;

a first anchor in a fixed location on the seabed;
a first unidirectional subsea actuator attached to the excavator and the first anchor for converting power to mechanical force between the first anchor and the excavator;

a vertical actuator attached to the excavator and a surface platform for controlling force between the excavator and the surface platform;

wherein the first unidirectional subsea actuator exerts force in response to actuator control signals.

2. The subsea excavation apparatus of claim 1 wherein the vertical actuator comprises a motion compensated actuator.

3. The subsea excavation apparatus of claim 1 wherein the first unidirectional subsea actuator is attached directly to the excavator.

4. The subsea excavation apparatus of claim 1 wherein the first anchor is adapted to resist both horizontal and upward forces.

5. The subsea excavation apparatus of claim 1 wherein the first unidirectional subsea actuator is responsive to actuator control signals to manage the location of the excavator on an excavation face.

6. The subsea excavation apparatus of claim 1 wherein the excavator is responsive to excavator control signals and the excavator control signals and actuator control signals are provided interdependently to manage excavation location and rate.

7. A subsea excavation apparatus comprising:

an excavator;

a first anchor on the seabed;

a second anchor on the seabed;

a third anchor on the seabed;

a first unidirectional subsea actuator attached to the excavator and the first anchor for converting power to mechanical force between the first anchor and the excavator;

a second unidirectional subsea actuator attached to the excavator and the second anchor for converting power to mechanical force between the second anchor and the excavator;

a third unidirectional subsea actuator attached to the excavator and the third anchor for converting power to mechanical force between the third anchor and the excavator;

wherein the first, second, and third unidirectional subsea actuators exert force in response to actuator control signals.

8. The subsea excavation apparatus of claim 7 wherein the first, second, and third unidirectional subsea actuators are responsive to actuator control signals to manage the location of the excavator on an excavation face in three dimensions.

9. A method for controlling a subsea excavator comprising:
providing a first anchor on the seabed;
providing at least one unidirectional subsea actuator;
providing power to at least one unidirectional subsea actuator;
converting the power to at least one unidirectional subsea actuator to a mechanical force with at least one unidirectional subsea actuator;
applying the mechanical force from at least one unidirectional subsea actuator between the unidirectional subsea excavator and the first anchor;
providing a vertical actuator;
providing power to the vertical actuator;
converting the power to the vertical actuator to a mechanical force with the vertical actuator;
using the mechanical force from the vertical actuator to control force between the excavator and a surface platform;
providing actuator control signals to the at least one unidirectional subsea actuator and the vertical actuator.

10. The method for controlling a subsea excavator of claim 9 wherein the actuator control signals control the force exerted by the at least one unidirectional subsea actuator.

11. The method for controlling a subsea excavator of claim 9 wherein the actuator control signals are used to manage the location of the excavator on an excavation face.

12. The method for controlling a subsea excavator of claim 9 further comprising:
providing excavator control signals to the excavator.

13. The method for controlling a subsea excavator of claim 9 wherein the power is provided by a surface platform.

14. The method for controlling a subsea excavator of claim 9 wherein the at least one subsea actuator applies mechanical force in a primarily horizontal direction.

15. The method for controlling a subsea excavator of claim 9 wherein:
the first anchor is adapted to resist both horizontal and upward forces; and
the vertical actuator comprises a motion compensated actuator.