What is claimed is:

1. An apparatus for shearing pipe within a blowout preventer (BOP), comprising:

a shear ram block having a forward end and a longitudinal axis;

a blade having a forward face;

a rearward face opposite of the forward face, the rearward face in abutment with the forward end of the shear ram block;

a plurality of face bolt passages extending through the blade and into the forward end of the shear ram block, each of the bolt passages being parallel to the longitudinal axis;

a face bolt located in each face bolt passages and securing the blade to the shear ram block;

at least one inclined bolt passage extending from an upper surface of the shear ram block downward and inward, out the forward end of the shear ram block and into the blade; and

an inclined bolt located in the inclined bolt passage to secure the blade to the shear ram block.

2. The apparatus of claim 1, wherein the inclined bolt passage is oriented such that a vertical plane passing thru the inclined bolt passage is parallel to the longitudinal axis.

3. The apparatus of claim 1, wherein the face bolt passage is oriented such that a vertical plane passing thru the face bolt passage is parallel to the longitudinal axis.

4. The apparatus of claim 1, wherein a counterbore and shoulder are formed in the inclined bolt passage.

5. The apparatus of claim 1, wherein a semi-circular seal groove is formed on the upper surface of the shear ram block and an entrance to the inclined bolt passage is between the seal groove and shear ram block.

6. The apparatus of claim 1, wherein two of the inclined bolt passages are each on opposite sides of longitudinal axis.

7. The apparatus of claim 1, wherein inclined bolt passage has a forward lower end located within the blade.

8. An shear ram assembly for a BOP, comprising:

upper and lower shear ram blocks each having a forward end and a longitudinal axis;

an upper blade having a forward face;

a lower blade having a forward face;

at least one rearward face opposite of at least one of the forward faces, the rearward face in abutment with the forward end of the upper and lower shear ram blocks;

a plurality of face bolt passages extending through at least one of the blades and into the forward end of at least one of the shear ram blocks, each of the bolt passages being parallel to the longitudinal axis;

a face bolt located in each face bolt passages and securing at least one of the blades to at least one of the shear ram blocks;

at least one inclined bolt passage extending from an upper surface of the upper shear ram block downward and inward, out the forward end of the upper shear ram block and into the upper blade; and

an inclined bolt located in the inclined bolt passage to secure the upper blade to the upper shear ram block.

9. The assembly of claim 1 further comprising:

at least one inclined bolt passage extending from a lower surface of the lower shear ram block upward and inward, out the forward end of the lower shear ram block and into the lower blades; and

an inclined bolt located in the inclined bolt passage to secure the lower blade to the lower shear ram block.

10. The apparatus of claim 8, wherein the inclined bolt passage is oriented such that a vertical plane passing thru the inclined bolt passage is parallel to the longitudinal axis.

11. The apparatus of claim 8, wherein the face bolt passage is oriented such that a vertical plane passing thru the face bolt passage is parallel to the longitudinal axis.

12. The apparatus of claim 8, wherein a counterbore and shoulder are formed in the inclined bolt passage.

13. The apparatus of claim 8, wherein a semi-circular seal groove is formed on the upper surface of the shear ram block and an entrance to the inclined bolt passage is between the seal groove and shear ram block.

14. The apparatus of claim 8, wherein two of the inclined bolt passages are each on opposite sides of longitudinal axis.

15. The apparatus of claim 8, wherein the inclined bolt passage has a forward lower end located within the upper blade.

16. A method for attaching a shear blade to a ram block mounted to a blowout preventer (BOP), the method comprising:

boring a first passage from an upper surface of the ram block to a forward end of the ram block;

boring a second passage in a rearward face of the shear blade, wherein the second passage registers with the first passage at an interface formed by the forward end of the ram block and the

rearward face of the shear blade; and

attaching the shear blade to the ram block with a bolt that engages the first passage and second passage.

17. The method of claim 16, wherein the first and second passages are bored at an angle relative to a horizontal axis, the angle being approximately in a range between about 15 degrees to about 45 degrees.

18. The method of claim 16, wherein the second passage terminates within the shear blade.

19. The method of claim 16, wherein a front bolt connects the shear blade to the ram block, the front bolt entering a forward face of the shear blade and into the ram block via a passage that extends through the shear blade and registers with a passage in the ram block, wherein said bolt and passages are parallel to a horizontal axis.

CLAIMS

1. An apparatus for shearing pipe within a blowout preventer (BOP), comprising:

a shear ram block having a forward end and a longitudinal axis;

a blade having a forward face;

a rearward face opposite of the forward face, the rearward face in abutment with the forward end of the shear ram block;

a plurality of face bolt passages extending through the blade and into the forward end of the shear ram block;

a face bolt located in each face bolt passages and securing the blade to the shear ram block;

at least one inclined bolt passage extending from an upper surface of the shear ram block downward and inward, out the forward end of the shear ram block and into the blade; and

an inclined bolt located in the inclined bolt passage to secure the blade to the shear ram block.

2. The apparatus of claim 1, wherein the inclined bolt passage is oriented such that a vertical plane passing thru the inclined bolt passage is parallel to the longitudinal axis.

3. The apparatus of claim 1, wherein the face bolt passage is oriented such that a vertical plane passing thru the face bolt passage is parallel to the longitudinal axis.

4. The apparatus of claim 1, wherein a counterbore and shoulder are formed in the inclined bolt passage.

5. The apparatus of claim 1, wherein a semi-circular seal groove is formed on the upper surface of the shear ram block and an entrance to the inclined bolt passage is between the seal groove and forward end of the shear ram block.

6. The apparatus of claim 1, wherein two of the inclined bolt passages are each on opposite sides of the longitudinal axis.

7. The apparatus of claim 1, wherein inclined bolt passage has a forward lower end located within the blade.

8. An shear ram assembly for a BOP, comprising:

upper and lower shear ram blocks each having a forward end and a longitudinal axis;

an upper blade having a forward face;

a lower blade having a forward face;

at least one rearward face opposite of at least one of the forward faces, the rearward face in abutment with the forward end of the upper and lower shear ram blocks;

a plurality of face bolt passages extending through at least one of the blades and into the forward end of at least one of the shear ram blocks;

a face bolt located in each face bolt passages and securing at least one of the blades to at least one of the shear ram blocks;

at least one inclined bolt passage extending from an upper surface of the upper shear ram block downward and inward, out the forward end of the upper shear ram block and into the upper blade; and

an inclined bolt located in the inclined bolt passage to secure the upper blade to the upper shear ram block.

9. The assembly of claim 1 further comprising:

at least one inclined bolt passage extending from a lower surface of the lower shear ram block upward and inward, out the forward end of the lower shear ram block and into the lower blade; and

an inclined bolt located in the inclined bolt passage to secure the lower blade to the lower shear ram block.

10. The apparatus of claim 8, wherein the inclined bolt passage is oriented such that a vertical plane passing thru the inclined bolt passage is parallel to the longitudinal axis.

11. The apparatus of claim 8, wherein the face bolt passage is oriented such that a vertical plane passing thru the face bolt passage is parallel to the longitudinal axis.

12. The apparatus of claim 8, wherein a counterbore and shoulder are formed in the inclined bolt passage.

13. The apparatus of claim 8, wherein a semi-circular seal groove is formed on the upper surface of the shear ram block and an entrance to the inclined bolt passage is between the seal groove and the forward end of the shear ram block.

14. The apparatus of claim 8, wherein two of the inclined bolt passages are each on opposite sides of the longitudinal axis.

15. The apparatus of claim 8, wherein the inclined bolt passage has a forward lower end located within the upper blade.

16. A method for attaching a shear blade to a ram block mounted to a blowout preventer (BOP), the method comprising:

boring a first passage from an upper surface of the ram block to a forward end of the ram block;

boring a second passage in a rearward face of the shear blade, wherein the second passage registers with the first passage at an interface formed by the forward end of the ram block and the rearward face of the shear blade; and

attaching the shear blade to the ram block with a bolt that engages the first passage and second passage;

the first and second passages bored at an angle relative to a horizontal axis, the angle being approximately in a range between about 15 degrees to about 45 degrees.

17. The method of claim 16, wherein the second passage terminates within the shear blade.

18. The method of claim 16, wherein a front bolt connects the shear blade to the ram block, the from bolt entering a forward face of the shear blade and into the ram block via a passage that extends through the shear blade and registers with a passage in the ram block, wherein said bolt and passages are parallel to a horizontal axis.