## THE CLAIMS

What is claimed is:

1. A constant tension tether management system for tethered aircraft comprising:

a ground station for operatively coupling to an unmanned aerial vehicle; and

wherein the ground station includes a spool rotatably disposed within the ground station and adapted to support a tether thereon, a first pulley rotatably mounted within the ground station along a tether travel path, a second pulley being rotatably disposed within the ground station and moving, between a first position and a second position, along the tether travel path, the first pulley being disposed along the tether travel path between the spool and the second pulley; a motor operatively coupled to the spool and rotating the spool; a tension spring operatively connected to the second pulley biasing the second pulley to a predetermined position; and sensor for determining the position of the second pulley relative to the predetermined position and outputting a control signal to the motor for controlling operation of the spool.

2. The constant tension tether management system for tethered aircraft of claim 1, wherein the second pulley moves in translation within the ground station as a function of a change in tension exhibited by a tether.

3. The constant tension tether management system for tethered aircraft of claim 1, further comprising:

an unmanned aerial vehicle; and a tether, the tether disposed in the ground station, and extending from the ground station to operatively couple the unmanned aerial vehicle to the ground station.

4. The constant tension tether management system for tethered aircraft of claim 1, wherein the tension spring is a constant tension spring.

5. The constant tension tether management system for tethered aircraft of claim 1, further comprising a linear track, the second pulley being disposed on the linear track, and the second pulley being movable between the first position and the second position along the linear track.

6. The constant tension tether management system for tethered aircraft of claim 1, wherein movement of the second pulley towards the first position indicates a decrease in tension of the tether.

7. The constant tension tether management system for tethered aircraft of claim 1, wherein movement of the second pulley towards the second position indicates an increase in tension of the tether.

8. The constant tension tether management system for tethered aircraft of claim 1, wherein the sensor causes the spool to rotate in one of a first direction or second direction as a function of a sensed position of the second pulley.

9. The constant tension tether management system for tethered aircraft of claim 1, wherein the tether extends about the second pulley for substantially one hundred and eighty degrees.