After starting and before taxiing, the taxi or landing light should be turned on. Continuous use of the landing light with revolutions per minute (rpm) power settings normally used for taxiing may place an excessive drain on the aircraft's electrical system. Also, overheating of the landing light could become a problem because of inadequate airflow to carry the heat away. Landing lights should be used as necessary while taxiing. When using landing lights, consideration should be given to not blinding other pilots. Taxi slowly, particularly in congested areas. If taxi lines are painted on the ramp or taxiway, these lines should be followed to ensure a proper path along the route.

The before takeoff and runup should be performed using the checklist. During the day, forward movement of the aircraft can be detected easily. At night, the aircraft could creep forward without being noticed unless the pilot is alert for this possibility. Hold or lock the brakes during the runup and be alert for any forward movement. *[Figure 12-8]*

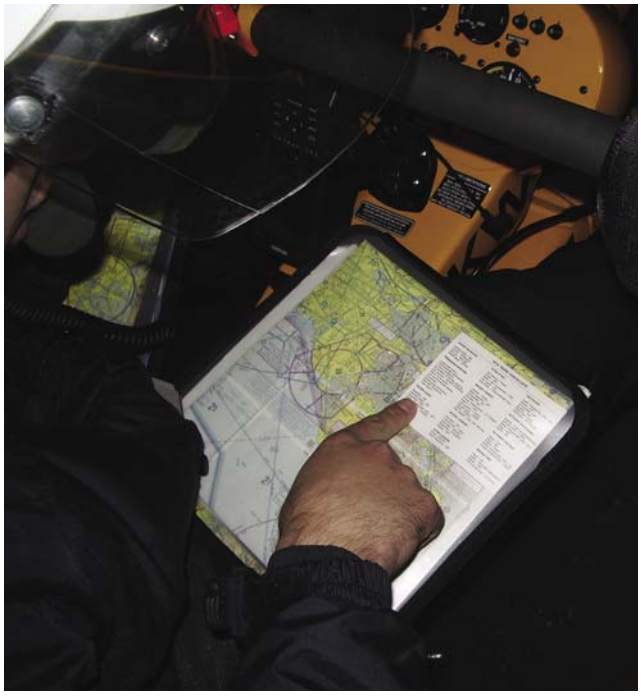

Figure 12-8. *Reviewing before-takeoff checklist, which is included for the flight with the sectional charts on the kneeboard.*

Takeoff and Climb

Night flying is very different from day flying and demands more attention of the pilot. The most noticeable difference is the limited availability of outside visual references. Therefore, flight instruments should be used as a reference in controlling the aircraft. This is particularly true on night takeoffs and climbs. The flight deck lights should be adjusted to a minimum brightness that allows the pilot to read the instruments and switches but not hinder the pilot's outside vision. This also eliminates light reflections on the windshield and instruments.

After ensuring that the final approach and runway are clear of other air traffic, or when cleared for takeoff by the tower, the landing lights and taxi lights should be turned on and the WSC aircraft lined up with the centerline of the runway. If the runway does not have centerline lighting, use the painted centerline and the runway edge lights. After the aircraft is aligned, the heading indicator should be noted or set to correspond to the known runway direction. The magnetic compass should read the exact direction of the runway. The GPS does not provide meaningful information while stopped or turning because it measures ground track and needs to be moving to register enough points to provide accurate data.

To begin the takeoff, the brakes should be released and the throttle smoothly advanced to maximum allowable power. As the aircraft accelerates, it should be kept moving straight ahead between and parallel to the runway-edge lights.

The procedure for night takeoffs is the same as for normal daytime takeoffs except that many of the runway visual cues are not available. Therefore, the airspeed flight instrument can be checked during the takeoff roll to ensure the proper airspeed in being obtained. As the airspeed reaches the normal lift-off speed, the pitch attitude should be adjusted to that which establishes a normal climb. This should be accomplished by using the normal control bar position for the desired climb speed. After liftoff, instruments can be checked for proper heading, and airspeed. *[Figures 12-9* and *12-10]*

The darkness of night often makes it difficult to note whether the airborne aircraft is getting closer to or farther from the surface. To ensure the aircraft continues in a positive climb, be sure a climb is indicated on the attitude indicator (if equipped), vertical speed indicator (VSI), and altimeter. It is also important to ensure the airspeed is at best climb speed.

Necessary pitch and bank adjustments should be made by referencing the attitude, heading, or ground track indicators. Heading indicators include both the aircraft heading indicators and the magnetic compass. Once the aircraft starts moving and establishing a ground track straight down the runway, the GPS has data points to establish a ground track and becomes useful once in flight. It is recommended that turns not be made until reaching a safe maneuvering altitude.

Although the use of the landing lights provides help during the takeoff, they become ineffective soon after liftoff when