

## How to use the A.L.P.O. Mars Section Observing Form

**INTRODUCTION.** This form is for those who make drawings. Whether you are a highly skilled artist wishing to depict fine detail, or a sketcher just wanting to show roughly what you see, this form will help. Keep in mind that the purpose of this form is to help you report your observation. If you don't need this form, that's fine. You are welcome to draw at any size or on any surface you want. Send me a board! But please notice that the form has a number of places for you to write information about the circumstances of your observation. For us to interpret your observation, some of this information is essential.

**TO WHOM TO SEND IT.** It is best to submit the form directly to the A.L.P.O. Mars Section coordinator. Currently, that person is Roger Venable. You can mail it to him at PO Box 117, Chester, Georgia, 31012 USA, or you can scan it and e-mail it to him at [rjvmd@hughes.net](mailto:rjvmd@hughes.net). Another option is to become a member of the Yahoo marsobservers list (<https://groups.yahoo.com/neo/groups/marsobservers/info>) so that you can upload it to the files section of that Yahoo group. Other organizations are also eager to receive your reports, including the Oriental Astronomy Association (<http://www.mars.dti.ne.jp/~cmo/ISMO.html>) and the A.L.P.O. Japan (<http://alpo-j.asahikawa-med.ac.jp/indexE.htm>). (The last of these has no direct connection the the A.L.P.O.)

**THE FOUR CIRCLES.** When printed on a standard 8.5" x 11" sheet of paper, each of these circles is 2 inches in diameter, a size which is widely used by those who draw planets. The main idea is to draw what you see in the left circle, and for the same observation, to diagram the relative brightnesses of features in the right circle. In the right circle, label the brightnesses according to our brightness scale, in which 0 is pitch black, and 10 is the brightest white that is ever seen on the planet. The polar caps are mostly of brightness 10, though sometimes there are less bright areas within them, and sometimes a cloud or the icy floor of Hellas will be a 10. If you see something of brightness 0 on Mars, you will be the first. Have a look at Carlos Hernandez's drawings and brightness diagrams for a good example of what to do, in the file here called "Sample Mars Observing Form."

Your brightness estimates will be unique to you, and can be compared to your estimates made in other observations of yours. Comparing your brightness estimates to those of other observers requires lots of study, so don't worry about it.

There is room on the form for two drawings -- the top one and the bottom one. The idea is to use filters, and to make a drawing and brightness estimates from the view through each of the filters you use.

When the planet appears gibbous, it is good to draw the phase defect in the circle, by whatever means you prefer.

Currently, most amateur observers depict the planet with south up, and we'll appreciate you if you do the same. Regardless of how you orient it, please indicate north and/or south on your diagram.

**TIME AND DATE.** These must be in Universal Time, which is abbreviated UT and corresponds to Greenwich Mean Time. So, you need to know your time zone. Please don't ask us to remember your time zone for you. Note that the time, and sometimes the date, will not be the same for the top drawing and the bottom drawing.

**CM.** This means central meridian, which is the longitudinal meridian of Mars, as measured in degrees of west longitude, that is in the center of Mars and directly facing the observer. It tells us which side of the planet we are looking at. This number can be obtained from most sky charting software, such as *Guide* or *The Sky*, or from the *WinJUPOS* program, or from the *WIMP* program.

**MAGNIFICATION.** Enter the magnifications you use.

**FILTERS.** If no filters are used, write in "none" or "integrated light," or the abbreviation for integrated light, "IL." The late, great Don Parker used to say, "Real men use filters," a take-off on the old book, "Real Men Don't Eat Quiche." The appearance of Mars through a red filter is very different from that through a violet filter, as the former reveals surface features and the latter shows atmospheric features. Thus, we will better interpret your drawing if you tell us what filter you use. A corollary of this is that your use of filters is essential to enable you to detect all you can on Mars.

**SEEING.** To describe the unsteadiness of Earth's atmosphere, we prefer to use the Pickering scale, which is an eleven point scale from 0 to 10, wherein 0 is the worst seeing you ever experience, 5 is average, and 10 is a perfectly steady view. The best way to do this is to use the number for the best seeing that occurred during your observation, as that is the seeing that limits what you can depict. If you prefer to use the Antoniadi scale, which is a five point scale from V to I, enter the appropriate Roman numeral. Remember that the ordinal directions of these two scales are opposite of one another -- the 0 and 1 on the Pickering scale correspond to V on the Antoniadi scale.

**TRANSPARENCY.** The number to enter on this line is the magnitude of the faintest star that you can see with your unaided eye in the vicinity of the sky in which Mars is located. A scale of 1 to 6 works well for rural sites, but for light-polluted sites observers sometimes modify the scale. This can be indicated by entering, for example, "2/3," in which perfect transparency at your site allows a magnitude limit of 3, while for this observation you judged the faintest star to be 2nd magnitude.

**COMMENT ON CONDITIONS.** Comments can be written here, such as, "scope shaking in wind," or "fluctuating transparency," or "aperture partly occluded by cloud of mosquitos".

**SCOPE TYPE.** Any unambiguous designation is fine, but RR means refractor, RL means Newtonian, SCT means Schmidt-Cassegrain, and Mak means Maksutov.

**BLUE CLEARING.** Typically, when used with a W47 (violet) filter, Mars will show no albedo features, and in such a case you would write "0" on this line. If you use some other dark blue filter, record "0" for whatever visibility of albedo features is usual for that filter. Then, for observations in which the surface features are more readily seen than usual with that filter, rate their visibility on a scale from 1 to 3. Experience will help you make this judgment. (A light blue filter such as a W80a is not conducive to making this observation.)

**DE.** This is the declination of the Earth in the Martian sky. It tells you whether the geometry of your observation allows you to see the North or South Pole of Mars. Its okay to leave it blank if your computer program doesn't give you this datum.

**DS.** This is the declination of the Sun in the Martian sky. It tells you whether the geometry of your observation is associated with solar illumination of a polar cap, and it gives you an idea of the location of the phase defect on the gibbous planet. Its okay to leave it blank if your computer program doesn't give you this datum.

**LS.** This is the areocentric longitude of the Sun in the Martian sky, which can range from 0 to 359. The zero point is the beginning of northern spring on Mars, and the number denotes the season of the Martian 687-day year. Its okay to leave it blank if your computer program doesn't give you this datum.

**PHASE ANGLE OR % ILLUM.** This is to give the reviewer of your observation some idea of the size of the phase defect. Most sky mapping software will give a figure for one of these values. Its okay to leave it blank if your computer program doesn't give you this datum.

**APPARENT DIAM.** Another value that can be retrieved from an ephemeris or a sky mapping program.

--- Roger Venable 2017