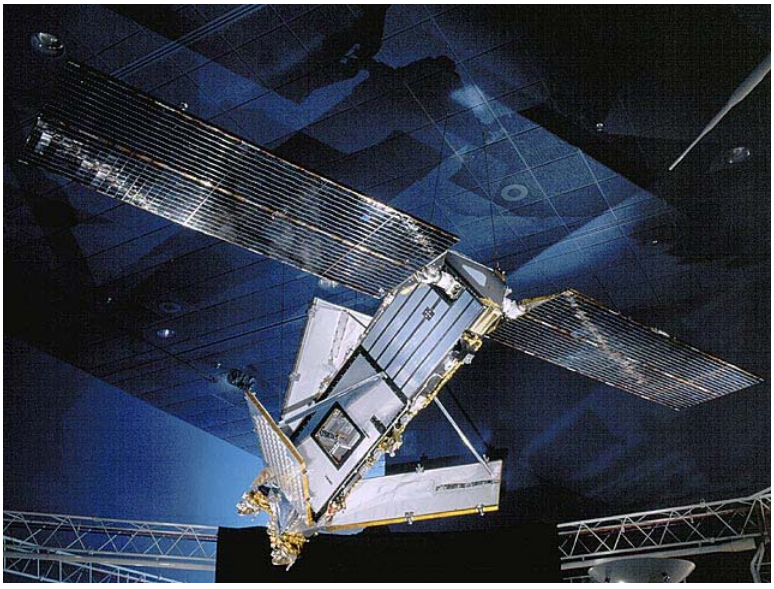
WORLD'S SHORTEST CATALOG: P2-PICKARD'S TRIPLE DOUBLE

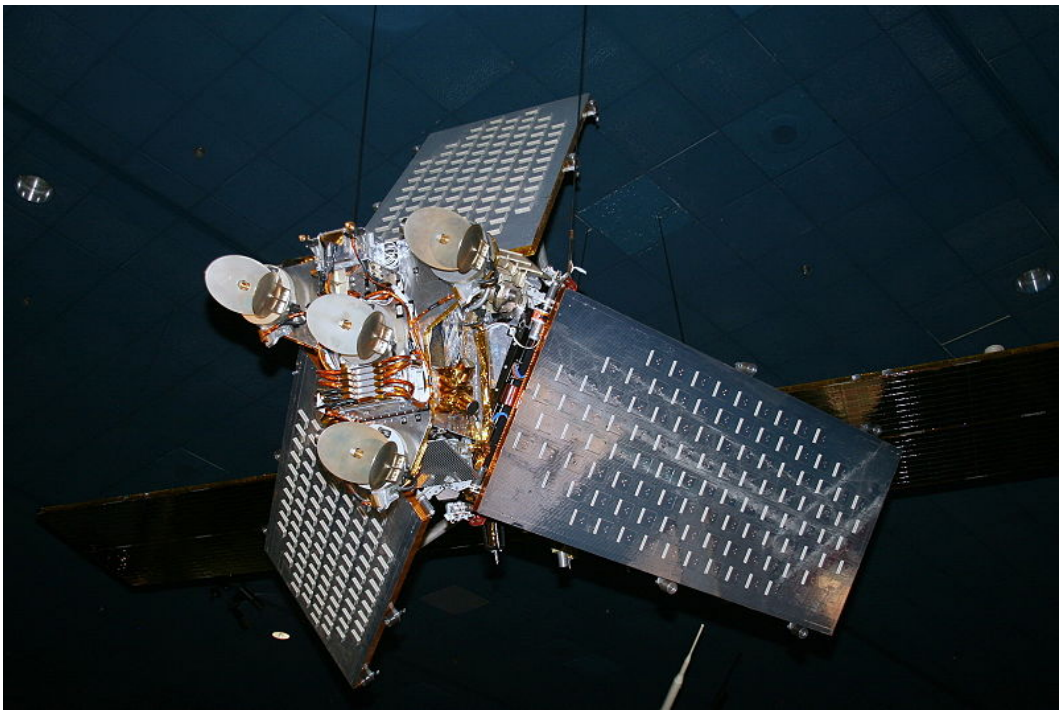
INTRODUCTION: The Iridium constellation of satellites consists of 66 telecommunication "birds". There are 6 orbits spaced 30° apart at the equator with 11 birds per orbit. All orbits circle the north and south poles in about 100 minutes. The original design called for 77 satellites. The "Iridium" name was chosen as that element has the atomic number of 77. The final design determined that 66 birds were sufficient for 100% coverage of the earth's surface, but the Iridium name was retained. It was a simple decision as who would EVER want to call this the Dysprosium Constellation of satellites?

Group → 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
↓ Period																	
1	1 H																2 He
2	3 Li	4 Be										5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg										13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba		72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra		104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus	118 Uuo
Lanthanides			57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu	
Actinides			89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr	

We have all seen satellites quickly tracing a path through the heavens. But the view is rather like sunlight reflecting off a cylinder as a point-source of light. What makes Iridium Flares unique is that they have 3 large, flat and highly reflective panels pointing down for telecom signals. They act like giant plate glass mirrors reflecting a bright beam on the earth's surface along their orbiting path. As the beam crosses your path, the point source begins to Flare VERY BRIGHTLY for a few seconds before returning to a point-source of light. Shown below are two views of an Iridium Satellite. The first one shows a head-on view with the solar collectors on top and the reflective panels below:



This picture shows a bottom view of the reflective panels:



Following and imaging these Flares has become almost a cult.

SERENDIPITY: When I found out about the Iridium Flares, I was surprised to learn that one was going to Flare very near P1-PICKARD'S LITTLE DIPPER. I couldn't pass up the opportunity to shoot it:

P1 is in the upper right, the Flare is mid-right, and all five of the Cassiopeia "W" stars are shown starting with Caph mid left then zig-zagging down to the left. You can see the article of P1 here on the LAAS site:

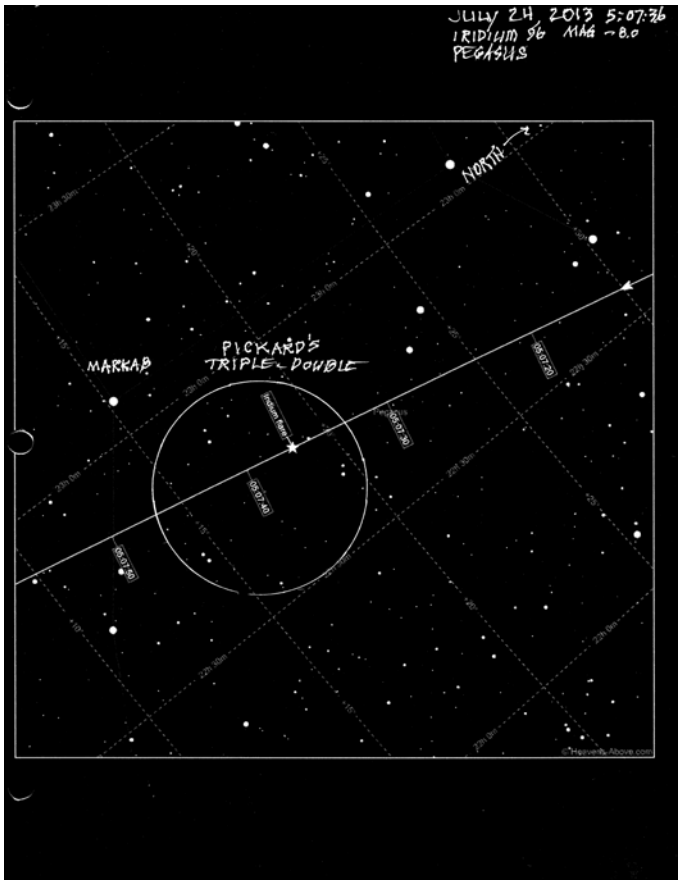
http://www.laas.org/joomlasite/index.php/bill-pickard-articles/pickard-back-articles/270-pickard-s-little-dipper

SO HOW BRIGHT IS BRIGHT? The range of brightness of celestial objects is mind boggling: So astronomers developed the Magnitude scale which is a logarithmic scale where an object 5 Mags brighter than another is exactly 100 times brighter. Bright objects have negative numbers and dim ones have progressively larger numbers. For comparison, Vega is the 2nd brightest star in the northern celestial sky with a Mag of +0.55 (after Arcturus which is Mag. -0.15). The moon is -13, the sun is -26. (The Sun is over 25 Billion times brighter than Vega.) Iridium Flares can be as bright as Magnitude -8.2 which is nearly 1600 times brighter than Vega. And they don't "Flash". Their rise and fall in brightness lasts about 3 seconds, hence a "Flare".

P2-PICKARD'S TRIPLE DOUBLE: This was also serendipity. I found that a very bright Flare was going to appear near Alpha Pegasi around 5:00 A.M. At that time in late July, Pegasus was low in the southern sky. So I was up a 4:00 A.M., set up the equipment. I set my watch to Naval observatory time and waited. I used a 30 second exposure and started the countdown 10 seconds before the arrival time. Here is the result:

It wasn't until afterwards that I saw three pair of optical double stars in the image. For those of you who remember the Dr. Pepper schedule of 10-2-4, the Triple Doubles are at 9-2-5. North is at the top.

Here is a chart from the HeavensAbove website which shows a better view of the Triple Double…North is at the upper right:



These are called “optical” doubles because they are a chance alignment and appear to be doubles. But they are not gravitationally-bound and are at different distances from the earth.

So there you have it: P2, the second entry in my WORLD’S SHORTEST CATALOGUE.

Bill Pickard

“The difference between Stupidity and Genius, Genius has its limits” Albert Einstein