



# SACnews

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## 7 myths about the Challenger shuttle disaster By James Oberg, NBC News space analyst, Special to MSNBC

HOUSTON - Twenty years ago, millions of television viewers were horrified to witness the live broadcast of the space shuttle Challenger exploding 73 seconds into flight, ending the lives of the seven astronauts on board. And they were equally horrified to learn in the aftermath of the disaster that the faulty design had been chosen by NASA to satisfy powerful politicians who had demanded the mission be launched, even under unsafe conditions. Meanwhile, a major factor in the disaster was that NASA had been ordered to use a weaker sealant for environmental reasons. Finally, NASA consoled itself and the nation with the realization that all frontiers are dangerous and to a certain extent, such a disaster should be accepted as inevitable.

At least, that seems to be how many people remember it, in whole or in part. That's how the story of the Challenger is often retold, in oral tradition and broadcast news, in public speeches and in private conversations and all around the Internet. But spaceflight historians believe that each element of the opening paragraph is factually untrue or at best extremely dubious. They are myths, undeserving of popular belief and unworthy of being repeated at every anniversary of the disaster.

The flight, and the lost crewmembers, deserve proper recognition and authentic commemoration. Historians, reporters, and every citizen need to take the time this week to remember what really happened, and especially to make sure their memories are as close as humanly possible to what really did happen.

If that happens, here's the way the mission may be remembered:

- 1: Few people actually saw the Challenger tragedy unfold live on television.
- 2: The shuttle did not explode in the common definition of that word.
- 3: The flight, and the astronauts' lives, did not end at that point, 73 seconds after launch.
- 4: The design of the booster, while possessing flaws subject to improvement, was neither especially dangerous if operated properly, nor the result of political interference.
- 5: Replacement of the original asbestos-bearing putty in the booster seals was unrelated to the failure.
- 6: There were pressures on the flight schedule, but none of any recognizable political origin.
- 7: Claims that the disaster was the unavoidable price to be paid for pioneering a new frontier were self-serving rationalizations on the part of those responsible for incompetent engineering management — the disaster should have been avoidable.

**Myth #1: A nation watched as tragedy unfolded:** Few people actually saw what happened live on television. The flight occurred during the early years of cable news, and although CNN was indeed carrying the launch when the shuttle was destroyed, all major broadcast stations

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## Snowstorm on Pluto

### By Dr. Tony Phillips

There's a nip in the air. Outside it's beginning to snow, the first fall of winter. A few delicate flakes tumble from the sky, innocently enough, but this is no mere flurry.

Soon the air is choked with snow, falling so fast and hard it seems to pull the sky down with it. Indeed, that's what happens. Weeks later when the storm finally ends the entire atmosphere is gone. Every molecule of air on your planet has frozen and fallen to the ground.

*That* was a snowstorm—on Pluto.

Once every year on Pluto (1 Pluto-year = 248 Earth-years), around the beginning of winter, it gets so cold that the atmosphere freezes. Air on Pluto is made mainly of nitrogen with a smattering of methane and other compounds. When the temperature dips to about 32 K (-240 C), these molecules crystallize and the atmosphere comes down.

"The collapse can happen quite suddenly," says Alan Stern of the Southwest Research Institute. "Snow begins to fall, the surface reflects more sunlight, forcing quicker cooling, accelerating the snowfall. It can all be over in a few weeks or months."

Researchers believe this will happen sometime during the next 10 to 20 years. Pluto is receding from the warmth of the Sun, carried outward by its 25% elliptical orbit. Winter is coming.

So is New Horizons. Stern is lead scientist for the robotic probe, which left Earth in January bound for Pluto. In 2015 New Horizons will become the first spacecraft to visit that distant planet. The question is, will it arrive before the snowstorm?

"We hope so," says Stern. The spacecraft is bristling with instruments designed to study Pluto's atmosphere and surface. "But we can't study the atmosphere if it's not there." Furthermore, a layer of snow on the ground ("probably a few centimeters deep," estimates Stern) could hide the underlying surface from New Horizons's remote sensors.



*This artist's rendering shows how Pluto and two of its possible three moons might look from the surface of the third moon. Credit: NASA/ESA and G. Bacon (STSci)*

Stern isn't too concerned: "Pluto's atmosphere was discovered in 1988 when astronomers watched the planet pass in front of a distant star—a stellar occultation." The star, instead of vanishing abruptly at Pluto's solid edge, faded slowly. Pluto was "fuzzy;" it had air. "Similar occultations observed since then (most recently in 2002) reveal no sign of [impending] collapse," says Stern. On the contrary, the atmosphere appears to be expanding, puffed up by lingering heat from Pluto's waning summer.

Nevertheless, it's a good thing New Horizons is fast, hurtling toward Pluto at 30,000 mph. Winter. New Horizons. Only one can be first. The race is on....

Find out more about the New Horizons mission at <http://pluto.jhuapl.edu> . Kids can learn amazing facts about Pluto at [spaceplace.nasa.gov/en/kids/pluto](http://spaceplace.nasa.gov/en/kids/pluto).

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

## SAC 2006 Budget

### Presented by Paul Dickson, Treasurer

It's the beginning of the year and it's time for SAC members to approve the yearly budget.

As with any club budget, the number of members in the club is very important. If we can get most everyone from 2005 to renew for 2006, SAC will be in very good shape. In 2005, SAC had 109 memberships, and if we keep that number, we do not have to dip into our savings.

Speaking of savings; at the beginning of the year Al Stiewing closed our savings account. This was done to avoid being hit by service charges on both accounts. With one account, we can reduce the services charges by half when our account drops below the limit.

Now on to the 2006 budget:

IDA Membership	\$100.00
Observing Awards	\$300.00
Web Site	\$100.00
SAC Hosted Events	\$680.00
Insurance	\$500.00
Meeting Expenses	\$1080.00
Miscellaneous	\$120.00
Newsletter	\$250.00
Supplies	\$30.00
<b>Total</b>	<b>\$3160.00</b>

With SAC's 2005 dues we brought in \$3185, so we are in good shape.

There are two addition items related to the budget. Last year the purchase of the spare bulb was approved for the video projector but was never done. At the January board meeting, the board decided to finally get this purchase done, so when we finally need the bulb, we will only be without the project for a few minutes rather than the few days or weeks to order the bulb. The board also approved T-shirts for the Messier Marathon. In the past this has generated extra revenue and could easily cover the spending necessary for the projector bulb. These purchases are not reflected in the above budget, but should be considered to be part of budget's vote.

I, and the rest of SAC's board of directors, hope you will approve this budget.

*(Pres. Note: This budget was presented by Paul to the board at the January board meeting. After discussion, the board unanimously voted to accept it and present it to the membership for ratification by the general membership. We fell all financial concerns of the club are adequately addressed and barring unforeseen circumstances, this budget will put the club on solid ground for 2006. If you have any questions or concerns, Please address them to the board, either at the SAC-Board mailing list or at the February meeting, prior to the vote. Any and all concerns will be duly addressed.*

*The Board and I recommend ratification as presented. (Rick)*

## Last Call For Observations–Lepus

By A.J. Crayon

This month we have observations for Lepus, the hare and all the time I've been thinking it as a butterfly. Now, in addition to the very nice M79, this constellation has a nice assortment of 10<sup>th</sup> and 11<sup>th</sup> magnitude galaxies and, as indicated in prior articles, is brighter than 12<sup>th</sup> magnitude making them visible in 8" telescopes. So how many observations were turned in? Read on and see for yourself.

### NGC1744

**8" f6, Newtonian, 60X;** AJ Crayon: this galaxy is 4 arc-minutes and magnitude 12.5; the field has about 100\* from 8<sup>th</sup> to 12<sup>th</sup> magnitude and is better than object! In short this means small and faint.

**14" CGE Celestron, 150X;** Joe Goss: Galaxy- Large, very faint, irregular oval, slightly brighter to center.

**20" F5, Dobsonian, 180X,** Ken Reeves: Very large, pretty faint, elongated 4:1 NNE/SSW, averted vision extends halo quite a bit. Middle is slightly brighter, but no nucleus. A faint star is on the NW of the middle.

### NGC1832

Located about 34' north of northwest from  $\mu$  Leporis is this barred spiral with a ring. Can you see the ring?

**8" f6, Newtonian, 100X;** AJ Crayon: galaxy located in the glare of  $\mu$ ; is very, very faint and with averted visions is very elongated in an east of northeasterly position. It gets gradually brighter near the east side. There is a 10<sup>th</sup> magnitude star just off the east edge. It is located in a pretty nice field of five 9<sup>th</sup> magnitude stars and 15 others from 10<sup>th</sup> through 13<sup>th</sup> magnitudes.

**10" F4.5, Dobsonian: 70X,** Ken Reeves: Somewhat small, somewhat faint, and slightly brighter in the middle with no nucleus. A star is involved on the E. Elongation difficult to tell due to the star, probably round.

**14" CGE Celestron, 122X;** Joe Goss: Galaxy- Fairly large, fairly bright, oval shape, brighter to center

### M79

**8" f6, Newtonian, various powers;** Charlie Whiting: Centering SAO170351 in low power eyepiece this GC was at the NE corner. I tried **60X, 120X** and **160X**. The "best" view was at **120X**. This GC is rated at 7.7 mag, is supposed to be 7.8' in diameter. But its surface brightness is much lower than 8<sup>th</sup> mag. It is located in the southern part of the sky, which is quite milky gray from my location. So, M 79 looks only like a light gray patch on a gray background. The core appeared to be about 1'-2', while the halo stretched only to 4' or 5'. There's an 11.4 mag star to the SE that I barely detected

it presence.

**8" f6, Newtonian, 8X;** AJ Crayon: in a 50mm finder this globular is small, faint and round. At **100X** it is about 7 arc-minutes in diameter and shines at magnitude 8.5; has a suddenly bright middle with stars well resolved around the edges and is very compressed. With averted vision it becomes brighter and larger with stars resolved in the halo. There are three 10<sup>th</sup> magnitude stars just outside the north edge.

**10" F4.5, Dobsonian: 100X to 240X,** Ken Reeves: **100X** Very bright, pretty large, bright middle. Stragglers spread out pretty far, very condensed. **170X** middle still unresolved, many stars spread over haze. **240X** a lot of stars pop out with averted vision, haze is definitely granular.

**10" Meade, 145X;** Joe Goss: Globular Cluster- Fairly small. Fairly bright, very compressed core, well resolved on outer edges.

**14.5" f5.2, Dobsonian, 140X;** AJ Crayon: this very nice globular cluster is surrounded by a halo of eight brighter stars on all but the west side. There are about 20 stars between the halo and the densely packed star images of the globular. It also has trail of six stars extending from the south side and going in a southerly direction.

### IC 418

This little know planetary is a very nice treat. It forms a nice triangle with 6.5 and 7<sup>th</sup> magnitude stars.

**8" f6, Newtonian, various powers;** Charlie Whiting: SAO stars 150427 and 150432 from a nice triangle with this nebula. IC 418 is rated at 10.7 mag, but as a point source it looks more like 8<sup>th</sup> mag. My first observation was from Flatiron. I was unaware that the sky was degrading rapidly. At **160X** and **320X** I saw it as round, solid and colorless, and only about 3-5" in diameter. Its rated size is 12". Three days later I re-observed it from Glendale. Surprisingly the seeing was better, but I still had the milky gray sky glow to contend with. At **160X** it looked to be about 4-5" in diameter, but had some character. The core was sharper and the halo more distinct. I had researched IC 418 on the net and found that it was called the Red PN. Observers with large instruments in dark skies might see it as red and, no doubt, larger. I saw it as blue to blue-green.

**8" f6, Newtonian, 200X;** AJ Crayon: about 11 years ago Gerry Rattley suggested I go see this planetary and that it is one not to be missed. He is correct! It is about 10 arc-seconds, round, 11<sup>th</sup> magnitude and has a little brighter middle. The field has 10 stars from 9<sup>th</sup> to 13<sup>th</sup>

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magnitudes. Yes it is pretty faint but one not to be missed. Thank you Gerry!

**10" Meade, 90X;** Joe Goss: Planetary Nebula- Small, bright, round, blue/gray color, OIII & UHC didn't improve view.

**14.5" f5.2, Dobsonian, 140X;** AJ Crayon: very small, very bright, round with a bright central star. It is rather amazing this planetary doesn't have an NGC number.

**20" F5, Dobsonian, 380X,** Ken Reeves: Quite bright, very small, obvious bright central star, a prominent disk surrounds the star, which is somewhat annular and very mottled. It may be slightly elongated N/S. The O-III filter does not help. This would be a great object on a night of perfect seeing with high power and a tracking scope. It seems somewhat darker on the S edge.

### NGC1964

This elongated barred spiral, an entry in the Herschel 400 list, can be found about 1° 40' southeast from  $\beta$  Leporis.

**8" f6, Newtonian, 100X;** AJ Crayon: this galaxy was estimated to be 2 arc-minutes and 12<sup>th</sup> magnitude. With averted vision it has a suddenly much brighter middle with a stellar nucleus. I called it very, very faint, round and very small.

**10" F4.5, Dobsonian: 100X,** Ken Reeves: Pretty small, fairly faint, very much brighter middle, either a star involved or perhaps a stellar nucleus. There is an isosceles triangle to the W. Elongated NNE/SSW. Another bright star or stellaring can be easily seen. Stars nearby interfere with it.

**10" Meade, 90X;** Joe Goss: Galaxy- Small, fairly faint, irregular shape, slightly brighter center.

**14.5", f5.2, Dobsonian, 140X;** AJ Crayon: Easily seen, pretty large, very elongated galaxy in a northeasterly position; has an elongated, centrally located, much brighter middle with an apparent stellar nucleus. There is a 10<sup>th</sup> magnitude star near the center on the north side and another, much fainter one, almost involved on the same side.

**16" f4.4 Newtonian;** Rick Rotramel: G - pS, fF, elongated, brighter in the middle, many field stars nearby.

**20" F5, Dobsonian, 180X,** Ken Reeves: Somewhat bright, somewhat small, faint halo with a brighter middle and a very much brighter non-stellar nucleus. Elongated 3:1 NE/SW. There is a faint star just touching halo to the W. To the NW is a Triangulum shaped asterism almost pointing to the object.

### NGC2017

This is an open cluster, also known as h3780 a most beautiful multiple star. So the question here is what

criteria is there for defining a grouping of related stars as a multiple star or an open cluster? No, I don't know but I'm hoping someone can come up with something!

**8" f6, Newtonian, various powers;** Charlie Whiting: At **38X** in the telescope it becomes a small asterism of 4 stars shaped like an irregular "Y". At **160X** the primary star is at the center intersection of the "Y". It is bluish in color and about 6.7 mag. The closest of the other 3 stars is pale yellow in color, 8<sup>th</sup> mag, very close to due north of the primary at about 80" separation. The next nearest is slightly orange in color, 8<sup>th</sup> mag, roughly SE of the primary at about 90" separation. The 4th star is slightly reddish in color, 8<sup>th</sup> mag, about 125" separation at PA 300. There is a faint 11<sup>th</sup> mag star about 90" separation at PA105. There's an even fainter 11<sup>th</sup> mag star about 60" separation at PA50. WDS has 2 designations for this system. All the above stars plus another 13<sup>th</sup> mag star are called HJ 3780. The primary has another companion at separation 0.4", and is called BU 321.

**8" f6, Newtonian, 100X;** AJ Crayon: a cluster of six stars with the three brightest being 8<sup>th</sup> and 9<sup>th</sup> magnitudes and three of 11<sup>th</sup> magnitude. The NGC/IC Project does not consider this to be a true open cluster.

**10" F4.5, Dobsonian: 100X,** Ken Reeves: Very bright, pretty small, extremely poor, and somewhat condensed. 2 levels of stars, 6 stars counted. It is kind of nice with the stars being so bright.

**14" CGE Celestron, 150X;** Joe Goss: Open Cluster- Small, 6 stars, 3 bright with nebulosity, 3 faint both sets from triangles.

**20" F5, Dobsonian, 180X,** Ken Reeves: A very nice grouping of 4 bright and 2 slightly fainter stars. The star on the NE edge is yellowish; all others are white or slightly bluish. 2 of the stars are supposed to be doubles, but the bad seeing does not allow them to be split.

### Call for Observations

For March the All Arizona Messier Marathon month scope out high in the northern sky Lynx. All but one are galaxies and we start with the barred spiral **NGC2273** is about 1° 25' north of northwest from 14 Lyncis. Next is the elliptical **NGC2320** is about 1° 30' southwest from magnitude 5.5 UY Lyncis. There are five other galaxies in a one-degree field, all of which are fainter than 14<sup>th</sup> magnitude. Can you ferret them out? Give it a try and post your results here. Another barred spiral is **UGC 3685**, listed as a 12<sup>th</sup> magnitude galaxy by the SAC database, is almost between two 8<sup>th</sup> magnitude stars. One of the stars is BV Lyncis and the other SAO 14106. Next is **NGC2340** is 16' north of 8<sup>th</sup> magnitude SAO 41600. In a 30 arc-minute field there are 3 more NGC

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had cut away — only to quickly return with taped relays. With Christa McAuliffe set to be the first teacher in space, NASA had arranged a satellite broadcast of the full mission into television sets in many schools, but the general public did not have access to this unless they were one of the then-few people with satellite dishes. What most people recall as a "live broadcast" was actually the taped replay broadcast soon after the event.

**Myth #2: Challenger exploded:** The shuttle did not explode in the common definition of that word. There was no shock wave, no detonation, no "bang" — viewers on the ground just heard the roar of the engines stop as the shuttle's fuel tank tore apart, spilling liquid oxygen and hydrogen which formed a huge fireball at an altitude of 46,000 ft. (Some television documentaries later added the sound of an explosion to these images.) But both solid-fuel strap-on boosters climbed up out of the cloud, still firing and unharmed by any explosion. Challenger itself was torn apart as it was flung free of the other rocket components and turned broadside into the Mach 2 airstream. Individual propellant tanks were seen exploding — but by then, the spacecraft was already in pieces.

**Myth #3: The crew died instantly:** The flight, and the astronauts' lives, did not end at that point, 73 seconds after launch. After Challenger was torn apart, the pieces continued upward from their own momentum, reaching a peak altitude of 65,000 ft before arching back down into the water. The cabin hit the surface 2 minutes and 45 seconds after breakup, and all investigations indicate the crew was still alive until then.

What's less clear is whether they were conscious. If the cabin depressurized (as seems likely), the crew would have had difficulty breathing. In the words of the final report by fellow astronauts, the crew "possibly but not certainly lost consciousness", even though a few of the emergency air bottles (designed for escape from a smoking vehicle on the ground) had been activated.

The cabin hit the water at a speed greater than 200 mph, resulting in a force of about 200 G's — crushing the structure and destroying everything inside. If the crew did lose consciousness (and the cabin may have been sufficiently intact to hold enough air long enough to prevent this), it's unknown if they would have regained it as the air thickened during the last seconds of the fall. Official NASA commemorations of "Challenger's 73-second flight" subtly deflect attention from what was happened in the almost three minutes of flight (and life) remaining AFTER the breakup.

**Myth #4: Dangerous booster flaws result of meddling:** The side-mounted booster rockets, which help propel the shuttle at launch then drop off during ascent, did possess flaws subject to improvement. But these flaws were neither especially dangerous if operated properly, nor the result of political interference.

Each of the pair of solid-fuel boosters was made from four separate segments that bolted end-to-end-to-end together, and flame escaping from one of the interfaces was what destroyed the shuttle. Although the obvious solution of making the boosters of one long segment (instead of four short ones) was later suggested, long solid fuel boosters have problems with safe propellant loading, with transport, and with stacking for launch — and multi-segment solids had had a good track record with the Titan-3 military satellite program. The winning contractor was located in Utah, the home state of a powerful Republican senator, but the company also had the strengths the NASA selection board was looking for. The segment interface was tricky and engineers kept tweaking the design to respond to flight anomalies, but when operated within tested environmental conditions, the equipment had been performing adequately.

**Myth #5: Environmental ban led to weaker sealant:** A favorite of the Internet, this myth states that a major factor in the disaster was that NASA had been ordered by regulatory agencies to abandon a working pressure sealant because it contained too much asbestos, and use a weaker replacement. But the replacement of the seal was unrelated to the disaster — and occurred prior to any environmental ban.

Even the original putty had persistent sealing problems, and after it was replaced by another putty that also contained asbestos, the higher level of breaches was connected not to the putty itself, but to a new test procedure being used. "We discovered that it was this leak check which was a likely cause of the dangerous bubbles in the putty that I had heard about," wrote physicist Richard Feynman, a member of the Challenger investigation board.

And the bubble effect was unconnected with the actual seal violation that would ultimately doom Challenger and its crew. The cause was an inadequate low-temperature performance of the O-ring seal itself, which had not been replaced.

**Myth #6: Political pressure forced the launch:** There were pressures on the flight schedule, but none of any

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# March 2006

<i>SUN</i>	<i>MON</i>	<i>TUE</i>	<i>WED</i>	<i>THU</i>	<i>FRI</i>	<i>SAT</i>
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

## Schedule of Events for February 2006

Mar. 6th	Moon at first quarter at 2016 mst.
Mar. 7th	ATM & Astro Imaging Subgroup Meetings at Thad's Shop 1930
Mar. 10th	SAC General Meeting at Grand Canyon University at 1930, Speaker Paul Knauth, Topic: What are We Really Finding on Mars.
Mar. 14th	Moon is full at 2335 mst.
Mar. 18th	SAC Star Party at Flat Iron Sunset 1842, End Ast. Twilight 2005, Moonrise 2230.
Mar. 22nd	Moon at last Quarter at 1910 mst.
Mar. 25th	2006 All Arizona Messier Marathon at Arizona City
Mar. 29th	Moon is new at 1015 mst.

## Future Planning

May 26th-28th	Riverside Astronomy Expo
June 17th-24th	Grand Canyon Star Party. Go to <a href="http://www.tucsonastronomy.org/gcsp.html">http://www.tucsonastronomy.org/gcsp.html</a> for more details

## Bits & Pices, Minutes of the January 13th Board Meeting Recorded by Susan Pritchard

The January 13, 2006 Board meeting opened at 6:40 pm by President Rick Tejera in the adjacent classroom to the general meeting classroom of Fleming Hall. Present were as follows: Rick Tejera, Paul Lind, Paul Dickson, Tom and Jennifer Polakis, Jack Jones and Susan V. Pritchard.

Paul Dickson presented the proposed 2006 budget for SAC and pointed out a special line item to purchase a spare projector bulb to have on hand in case the current bulb burns out. There was some other discussion about the budget items, but overall, most expenses were in line with the 2005 budget expenses. Because there is no cost for the printed newsletter due to the generosity of Peter Argenziano, the club saves a considerable amount of money. Membership dues renewals are the main source of income and as of this date, only 45 members have renewed for 2006. A motion was made to accept the proposed 2006 budget and present it to the general membership.

In another announcement, Paul Dickson proposed that Dean Ketelson be made an honorary SAC member and Rick said that he would bring this up at the general

meeting. Because of a problem with signs at the Messier Marathon, A. J. Crayon suggested that the club needs some new signs and directions for these events. As Properties manager, Tom Polakis agreed to look into the issue of signs, directions, and possibly flashing yellow lights to mark the sites. A. J. mentioned that Don Machholz might be at the Messier Marathon as possible speaker or to sign copies of his books. Jack Jones is arranging for the port-a-potties to be present and will order new Marathon shirts for the event. He said that he still has shirts left over from the All Arizona Party in various sizes. He also said that he would not be able to attend the Grand Canyon Star Party and needed someone to coordinate the activities—Jennifer Polakis volunteered.

Rick Tejera brought up some possible safety and security issues at Sentinel, and the Board discussed the issues, but agreed to wait and see. The Board did consider proposing an alternative replacement site. He would bring this issue to the general meeting. There was a motion by Rick to adjourn, and A. J. seconded it, and the meeting adjourned at 7:15 pm.

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recognizable political origin. Launch officials clearly felt pressure to get the mission off after repeated delays, and they were embarrassed by repeated mockery on the television news of previous scrubs, but the driving factor in their minds seems to have been two shuttle-launched planetary probes. The first ever probes of this kind, they had an unmovable launch window just four months in the future. The persistent rumor that the White House had ordered the flight to proceed in order to spice up President Reagan's scheduled State of the Union address seems based on political motivations, not any direct testimony or other first-hand evidence. Feynman personally checked out the rumor and never found any substantiation. If Challenger's flight had gone according to plan, the crew would have been asleep at the time of Reagan's speech, and no communications links had been set up.

**Myth #7: An unavoidable price for progress:** Claims that the disaster was the unavoidable price to be paid for pioneering a new frontier were self-serving rationalizations on the part of those responsible for incompetent engineering management — the disaster should

have been avoidable. NASA managers made a bad call for the launch decision, and engineers who had qualms about the O-rings were bullied or bamboozled into acquiescence. The skeptics' argument that launching with record cold temperatures is valid, but it probably was not argued as persuasively as it might have been, in hindsight. If launched on a warmer day, with gentler high-altitude winds, there's every reason to suppose the flight would have been successful and the troublesome seal design (which already had the attention of designers) would have been modified at a pace that turned out to have been far too leisurely. The disaster need never have happened if managers and workers had clung to known principles of safely operating on the edge of extreme hazards — nothing was learned by the disaster that hadn't already been learned, and then forgotten.

*NBC News space analyst James Oberger spent 22 years at NASA's Johnson Space Center as a Mission Control operator and an orbital designer. © 2006 MSNBC Interactive, First published on MSNBC.com at 11:25 a.m. ET Jan. 27, 2006*

## Bits & Pisces, Minutes of the January 13th General Meeting

### By Susan Pritchard

The January 13, 2006 meeting opened at 7:30 by President Rick Tejera, who welcomed all visitors and members. He invited the visitors to introduce themselves and sign the guest book and receive a copy of the SAC newsletter. Paul Dickson gave the Treasurer's Report—the club has a balance of \$4,733.86. He then proposed that the club make Dean Ketelson an honorary member—he made a motion with that suggestion—Dave Fredericksen seconded, and the unanimous vote was carried enthusiastically in favor by the members. Paul told the members that the 2006 Budget would be presented at next month's meeting for approval by the members and reminded members about renewing their 2006 memberships.

Announcements: A. J. Crayon reminded the members about the upcoming Messier Marathon on March 25-26, 2006 at the Farnsworth Ranch near Arizona City. He said that Don Machholz would be present to meet with people and sign books. He then asked members to record their observations and send them to him to be included in his column for the newsletter. The constellation for the Deep Sky meeting would be Aries for January, Lepus for February and Lynx for March. Rick reminded the members about the next Star Party would be at Flat Iron on January 21. Peter Argenziano said that he still had a few Observers' Handbooks for sale and Rick thanked Peter for printing the newsletters for free. Jack Jones told the members that he still had

about 30 shirts for sale in various sizes and colors—see him during break. Steve Coe announced that the next meeting of the Novice Group would be on Feb. 18 at Flat Iron and that he had some books and eyepieces for sale. Walter Thomas then presented a new gavel to Rick for his official SAC use.

Show 'n Tell—Rick Tejera showed some slides of the members who volunteered at the public star parties at Dreamy Draw and Thunderbird Park. The pictures showed their telescopes and the public—especially the Girl Scout Troops at Thunderbird. Rick thanked Susan Pritchard for taking the pictures. Tom Polakis then showed a few slides from a new program which demonstrated the location of the Messier object in relationship to Earth & the Milky Way. Gene Lucas made an announcement that Taki Star Atlas used the SAC database for its publication.

After the break, one of our own members, Paul Lind, presented a slide show on Astrophotography—Before 1910. He gave a wonderful explanation of the development of photography and moved backward in time from 1910 to the earliest pictures taken with cameras in 1839. The meeting adjourned at 9:45 pm and members went to the J.B.'s restaurant at Northern and 35<sup>th</sup> Avenue for fellowship and food.

*(Continued from page 5)*

and 6 more IC galaxies – all very faint! Thirty-five arc-minutes west of magnitude 5.5 SAO 41644 will be found **NGC2344**. Finally, one of the main attractions if not the main attraction of Lynx is the globular cluster **NGC2419**, often called the intergalactic tramp due to its extreme distance from the Milky Way galaxy. If you haven't seen this one, take a look as soon as possible. It can be found about 40' northwest from 6<sup>th</sup> magnitude SAO 60257.

During the January SAC meeting I was talking to some members about their observations in Puppis, so I decided that for April that should be a good constellation. This will give us a break from galaxies and give us a chance to do some open clusters and planetary nebulae. So, with so much to choose from and so little space, where do we start? **M47**, of course! Next is **M46**! Third is **NGC2438** the planetary nebula towards the north of northwest segment of M46. This is expected to be a separate observation that is not to be

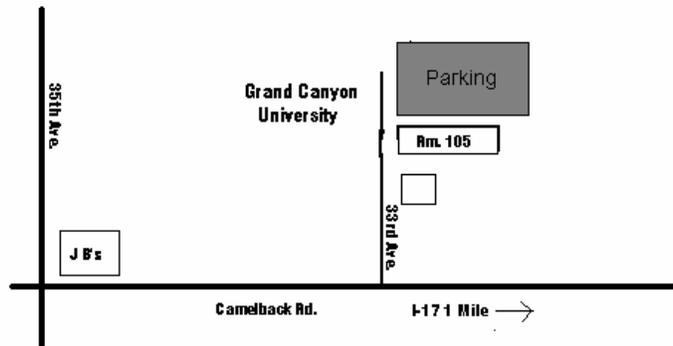
included with the magnificent M46. Try all the power the evening permits, try filters and try a hood to see what kind of detail you can record. Let us know your findings. Next up is **NGC2539** another large open cluster at about 30 arc-minutes. It should be easily found as 5<sup>th</sup> magnitude 19 Puppis is located just at the edge of this cluster. Another open cluster **NGC2527**, also named **NGC2520**, is located about 4° south of rho Puppis is a pretty rich grouping of stars. Finally, the most southerly of this batch and located towards the west side of the constellation is **Collinder 135**, a large bright open cluster that included  $\pi$  Puppis. At magnitude 2.1 and about 50 arc-minutes, can you see it with your naked eye? I wish we had time for more as there are enough clusters and nebula for more visits.

For now, enjoy this tour.

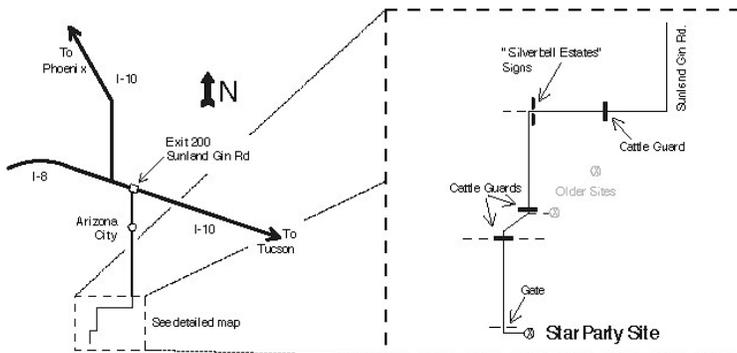
# SAC Meeting and Observing Sites

## General Meetings

7:30 p.m. at Grand Canyon University, Fleming Building, Room 105: 1 mile west of I-17 on Camelback Rd., North on 33rd Ave., Second building on the right.



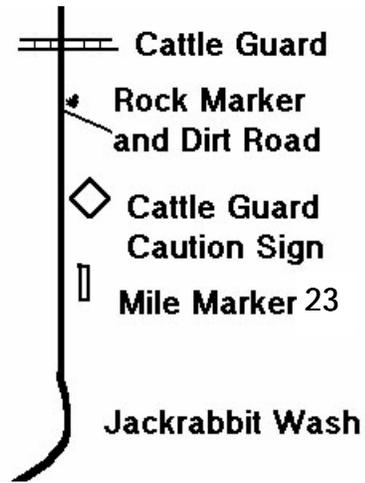
## 2006 All Arizona Messier Marathon



The directions are:

Take I-10 to exit 200 (Sunland Gin Road.) From here it is about 29 miles to the site. Turn right (south) after exiting the freeway. After about 15 miles, the pavement ends and about one mile further, the road turns sharply to the west. After another four miles, the main road will turn south just after the "Silverbell Estates" signs. Three miles past the signs, the road will veer off to the west, and five miles further, the road will pass through a gate. Turn left immediately after the gate and continue for another 2/3 of a mile, driving over a fence. The site is to the right.

## Flatiron Star Parties



Head west on I-10 to the 339th Ave exit (exit 103). Turn North (right) and go two miles to Indian School Rd. Turn West (left) on Indian School and go 2 miles to 355th Ave. Turn North (right). This will turn into Wickenburg Rd. Follow this road for about 12 miles. Just after mile marker 23 you will go through Jackrabbit wash and pass a cattle guard sign. There is a dirt road just after the sign, marked by white painted rocks. Turn on to this road and follow it about .9 miles. Just after you pass through a wash, you'll see the field on your left. If you hit the cattle guard, or the dirt road your on is next to a fence, you've missed the correct road. Go back and look for the white rocks. (see detail map above).

## SAC Membership Services

**Membership**– Memberships are for the calendar year and are pro-rated for new members as follows: Jan– Mar: 100%; Apr– Jun: 75%; Jul-Sep: 50%; Oct-Dec; 25%.

- \$28.00 Individual Membership
- \$42.00 Family Membership
- \$14.00 Newsletter Only
- \$10.50 Nametag for members, Pinned Clasp
- \$12.00 Nametag for members, Magnetic Clasp  
(will be mailed to address below)

### Magazine Subscription Services

The following magazines are available at a discount to club members. Check the magazines you wish to subscribe to or renew, and pay the club treasurer. Please allow 3-4 months for the order to be processed.

- Sky & Telescope      \$33.00/yr
- Astronomy                \$34.00/yr
- Astronomy                \$60.00 for 2 Years

Please Print

**Make Check Payable to : SAC**

Name: \_\_\_\_\_

Bring completed form to a meeting or mail it with your remittance to:

Address: \_\_\_\_\_

SAC Treasurer  
c/o Paul Dickson  
7714 N 36th Ave  
Phoenix, AZ 85051-6401

City: \_\_\_\_\_ St: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Check here if this is an update of information already on file.

E-Mail: \_\_\_\_\_

### SAC on the Internet

SAC has several E-mail mailing lists. To subscribe, send an email to the email address and put **Subscribe** in the subject box.

**SAC-Announce@freelists.org:** SAC-Announce is a mailing list for just club announcements, Typically 3-5 messages per month.

**SAC-Forum@freelists.org:** SAC-Forum is a general discussion mailing list. Topics should be related to Astronomy or SAC

**SAC-Board@freelists.org:** SAC-Board is a mailing list for discussions of club business. If you'd like to see how the club is run (or not run), or have a question about the club, this is the list to read. Typically month to month matters are discussed.

**AZ-Observing@freelists.org:** AZ-Observing while not a Sac list, is well attended by SAC members. This is the list to with observing places around Arizona. Find out where people are going and what they saw.

### Printed Newsletter

Sac can save a lot of money if you download the PDF version of the newsletter. PDF files are readable by both PC's and Macs. When the newsletter is published, a message will be sent to the address indicated above with the URL of the newsletter. Check the box below if you don't have access to the internet or if your prefer a printed copy.

Please send me a hard Copy of the newsletter

# SAGUARO ASTRONOMY CLUB

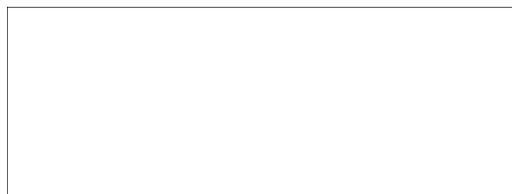
February 2006

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*Videmus Stellae*



## SAC Schedule of Events 2006

### SAC Meetings

January 13th, 2006    July 14th, 2006  
February 10th, 2006    August 11th, 2006  
**March 10th, 2006**    September 8th, 2006  
April 14th, 2006    October 6th, 2006  
May 12th, 2006    November 10th, 2006  
June 9th, 2006    December: TBA

### ATM & Astro-Imaging Group Meetings

January 10th, 2006    July 11th, 2006  
February 7th, 2006    August 8th, 2006  
**March 7th, 2006**    September 5th, 2006  
April 11th, 2006    October 3rd, 2006  
May 9th, 2006    November 7th, 2006  
June 6th, 2006    December 5th, 2006

### SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan 21st, 2006	1752	1919	0044	F
Feb 18th, 2006	1818	1942	2335	F
<b>Mar 18th, 2006</b>	<b>1842</b>	<b>2005</b>	<b>2230</b>	<b>F</b>
Apr 22nd, 2006	1908	2037	0347	F
May 20th, 2006	1928	2108	0157	C
Jun 17th, 2006	1943	2129	0029	C
Jul 22nd, 2006	1938	2117	0346	C
Aug 19th, 2006	1911	2042	0240	C
Sep 16th, 2006	1854	1958	0135	C
Oct 14th, 2006	1759	1921	0033	F
Nov 11th, 2006	1723	1850	2316	F
Dec 16th, 2006	1725	1854	0449	F

F = Flat Iron; C = Cherry Road