CHATHAM-KENT ASTRONOMY CLUB

ASTRO-CHAT

Newsletter of the Chatham Kent Astronomy Club

APRIL 1986 Vol3 No(4)

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Deadline for May issue is now

As you have probably observed, this is no ordinary issue of ASTRO-CHAT, in fact it hardly qualifies as an issue at all. Due to circumstances, I just havn't had the time to devote to my editorial duties.

Somwhere under the pile of rubble that I call home improvement and my wife calls demolition, sits a typewriter.

On April 14, there is a council meeting at Jim Lucyk's. If you havn't received this newsletter yet don't worry about it.

Astronomy day this year is April 19. As we have in the past we will be doing our part by having public observing at B'nai-Brith park, on Thames street, starting at dusk.

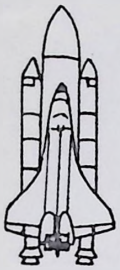
Our next regular meeting is April 25 at C.K.S.S, room 213, 7-00pm.

I havn't been in touch with anyone, so I don't know what is happening on the observing scene. I don't think there'll be any more until the begining of May.

Dan Kahraman reported to me that he and Paul Aoki saw Comet Halley last month.

While I was visiting in the hospital last week I saw new arrival Michael Anthony Marchand. Congratulations.

Thanks to Rob Cathrasso for a line article. My fault it's late.



STS

A Grim Discovery

Robert Cattrysse

29 kilometres east of where it lifted-off on the 25th Space Shuttle flight on January 28 wreckage was found of the crew compartment of the orbiter Challenger and remains of her seven astronauts. The discovery was made on March 7 and divers in 30 metres of water reported that they had spotted remains of the crew.

On March 9 NASA announced that search teams combing the waters off Cape Canaveral for Challenger debris have found the crew cabin. NASA said that all family members of the dead astronauts were told of the discovery but some said they first heard of it from news reports. Some family members were glad that the remains were found. Others wished the discovery had never taken place. "I want him up here, not down there being devoured by sharks," said Bruce Jarvis, 68, father of astronaut-engineer Gregory Jarvis. "Alan, my youngest son, wishes Gregory would have been left down there in peace."

Said Carl McNair, father of Challenger physicist Ronald McNair: "We are going to have to go through the same thing we did a month ago with the memorial services--only this time it will be a funeral."

"It just brings it all back again," said Dr. Marvin Resnik, father of Judith Resnik. The Resniks want no funeral service; they have asked NASA to cremate their daughter's remains and scatter them over the ocean, where Challenger met its end.

The days following the grim discovery remains of the seven dead astronauts were brought ashore. The USS Preserver slipped into Port Canaveral with only its running lights showing. As the ship tied up at a high-security Trident-submarine dock, sailors in dress blue uniforms solemnly stood at parade rest on the deck before a stack of tarpaulin-wrapped parcels and a flag-draped coffin. The sailors carried the coffin and several packages that resembled body bags to three waiting ambulances, which sped the cargo to the nearby Cape Canaveral Patrick Air Force Station, where pathologists had set up a temporary forensic laboratory.

Following this recovery more debris from the cabin was recovered. Included were 2 spacesuits used for spacewalks (no spacewalk was planned for this mission), the Challenger's flight recorders, other items from the cabin and more remains of the Challenger Seven.

While pathologists tried to identify the remains more pieces of the Shuttle's booster rockets were found and recovered. One piece of wreckage is believed to be from the right SRB containing part of the joint where the O-Rings are believed to have failed. The scenario of the tragedy now goes like this:

T-:06 The Space Shuttle Main Engines (SSMEs) fire. This bends the entire spaceship and puts strain on the critical seals on the solid rocket boosters (SRBs).

T+:01 A puff of black smoke is seen near the lower seal of the right SRB. This seal connects the two lower segments of the rocket. The fuel in the booster is burning the putty and O-Rings in that seal, thus causing the smoke to appear.

T+:04 The leak temporarily corrects itself in the intense heat.

T+:40 Challenger encounters the highest winds ever for a Space Shuttle flight and the turbulence swings the SRBs back and forth. Scientists think that this loosened the already weak seals.

T+:59 The leak reappears at the bottom of the right side booster

and flames can be seen burning through the casing. The flame grows in size until it either does one of the following:
1. The flame either burns the lower ET (external tank)/SRB struts or causes them to snap. These struts hold the SRB to the ET. Now the right SRB swings freely and the top of the rocket crushes into the fuel tank.
2. The flame burns at the external tank.

T+:73 Just after the tank is crushed or ignited the Space Shuttle Challenger explodes. NASA belives #1. above is the correct cause. They think the hydrogen fuel began to leak 73.137 seconds into the flight and then triggered the explosion.

What caused the O-Ring to fail? Challenger was moved to Launch Pad 39-B on December 22 and during the time prior to launch rain water collected in the joint. Freezing temperatures on launch day froze the water which then forced open the critical seal.

The O-Ring may have been defective. While the boosters were being assembled one segment may have sliced an O-Ring and that O-Ring may have then been the wrong diameter at one point. Pictures of the O-Ring that is believed to have failed show that it was the incorrect diameter before being assembled, 15 thousandths less.

During the assembling process the lower segment of the right SRB was out of shape or out of roundness so technicians used a special instrument to reshape it. This segment had been used before. This was the maximum reshaping to date and this may have damaged the O-Ring.

In other developments:

NASA Administrator James Beggs resigned. Last December he took a leave of absence due to charges not related to his NASA post and planned to return to NASA after he was cleared.

President Ronald Reagan nominated James Fletcher, 66, as the new NASA Administrator. Fletcher was leader of NASA from 1971 to 1977 and a physicist who headed a commission that urged Reagan to develop a Star Wars defense against missiles. The mild-mannered Fletcher comes to the post with one handicap: he has accused the Rogers commission of being engaged in a "witch-hunt."

Director of the Kennedy Space Center Richard G. Smith criticized the Rogers commission for criticizing and blaming key NASA personnel for the disaster. He said many people could leave NASA because of what the commission investigating the Challenger disaster is saying.

Astronauts were firing off criticism to NASA's reputation. On March 8 the Houston Post printed a memo sent to space-program officials by Chief Astronaut John Young, 55, on March 4 which stated he was citing safety compromises on Shuttle flights dating back to October 1984. The list, said Young, "proves to me that there are some very lucky people around here." Safety had to become a top priority, Young wrote, or NASA "will not survive and neither will our three Space Shuttles or their flight crews."

Later, new memos said, Young charges that safety was sacrificed to "launch-schedule pressure." He warned of an "awesome" list of safety problems, including a runway at KSC that is too short, too rough and subject to erratic weather. While gliding the 100-ton Shuttle into Kennedy rather than onto the dry lake beds at Edwards Air Force Base in the California desert "may be a wonderful political policy," Young wrote his NASA bosses in January, "it is not an intelligent technical policy." Shuttle Inquiry Commission Member Richard Feynman, a Nobel laureate, charged that the Shuttle blew up because of "hopeless" design flaws in the booster. He blamed

"attitudinal problems" in NASA's management. NASA managers said they disagreed with John Young's charge that the agency had sacrificed safety in its zeal to meet launch schedules. But the agency will have to do more than issue denials to regain the confidence of the men and women who fly the Shuttle. "I think you'll find a lot of people in the office who agree with John," said veteran astronaut Henry W. Hartsfield Jr.

The Miami Herald criticized NASA for wasting money. It said that NASA was paying toomuch to its contractors. In one instance, NASA paid $315 for a wire fastener the size of a dime when they should have only paid 3 cents. Sources said: "As much as one third of the agency's budget is wasted on overcharges."

Acting NASA chief William R. Graham acknowledged that NASA faced a long, costly delay in the Shuttle program. He estimated that it would cost $3.2 billion to replace the Challenger--$2.2 billion for a new orbiter and $1 billion to redesign the solid rocket booster joints and replace the spacewalk suits, mechanical cargo-bay arm and other equipment lost when the spacecraft blew up.

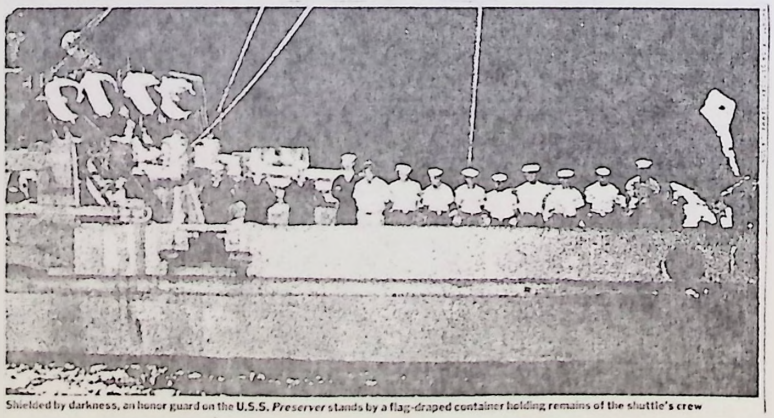
Sonar images of the seabed where Challenger's crew cabin fell, made available to reporters on March 23, show a ghostly pattern of wreckage that indicates a portion of the compartment may have crashed into the ocean relatively intact.

The sonar map clearly shows the anchor marks of the USS Preserver, the navy salvage ship that has made four trips to the wreck site to recover debris and remains of the seven astronauts, and a tight mass of wreckage still remaining to be salvaged. Many days the search had to be called off because of bad weather off Cape Canaveral. Most of the time it was high winds hampering the search efforts.

Commander James Buckingham, directing the navy's role in the Shuttle salvage operation, said that debris from the Space Shuttle itself is concentrated in an oval area offshore measuring about 8 kilometres by 11 kilometres. The pieces being found are a lot larger than anyone expected.

Former test pilot Brigadier General Chuck Yeager of the United States Air Force (USAF) said the accident should not have an effect in the long-range. Yeager said, "It will obviously have a short term effect on the Shuttle until we fix it. We could safely, in my opinion, fly the Shuttle tomorrow if the temperature was warm but obviously we won't and it's according to how complex the redesign of the solid rocket boosters will come about and for as changing any weaker areas in management or communications and that can happen immediately."

Yeager also said he does not view that Shuttle accident any differently than a crash of a military or commercial flight. He said all are tragic but also bring problems to the surface that otherwise would have remained hidden.



Shielded by darkness, an honor guard on the U.S.S. *Preserver* stands by a flag-draped container holding remains of the shuttle's crew