

(NOONAN)

JANUARY 28, 1986

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PRESIDENT'S BACKUP COPY

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ADDRESS TO THE NATION:

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DEATH OF SPACE SHUTTLE CHALLENGER CREW

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LADIES AND GENTLEMEN, I HAD PLANNED TO SPEAK TO YOU TONIGHT TO REPORT ON THE STATE OF THE UNION, BUT THE EVENTS OF EARLIER TODAY HAVE LED ME TO CHANGE THOSE PLANS. TODAY IS A DAY FOR MOURNING, AND REMEMBERING.

NANCY AND I ARE PAINED TO THE CORE BY THE TRAGEDY OF THE SHUTTLE CHALLENGER. WE KNOW WE SHARE THIS PAIN WITH ALL OF THE PEOPLE OF OUR COUNTRY. THIS IS TRULY A NATIONAL LOSS.

NINETEEN YEARS AGO ALMOST TO THE DAY, WE LOST THREE ASTRONAUTS IN A TERRIBLE ACCIDENT ON THE GROUND. BUT WE HAVE NEVER LOST AN ASTRONAUT IN FLIGHT. WE HAVE NEVER HAD A TRAGEDY LIKE THIS. AND PERHAPS WE HAVE FORGOTTEN THE COURAGE IT TOOK FOR THE CREW OF THE SHUTTLE. BUT THEY, THE CHALLENGER SEVEN, WERE AWARE OF THE DANGERS -- AND OVERCAME THEM AND DID THEIR JOBS BRILLIANTLY.

WE MOURN SEVEN HEROES -- MICHAEL SMITH, DICK SCOBEE, JUDITH RESNIK, RONALD McNAIR, ELLISON (OH-NIH-ZOO-KUH), GREGORY JARVIS, AND CHRISTA McAULIFFE. WE MOURN THEIR LOSS AS A NATION, TOGETHER.

TO THE FAMILIES OF THE SEVEN: WE CANNOT BEAR, AS YOU DO, THE FULL IMPACT OF THIS TRAGEDY -- BUT WE FEEL THE LOSS, AND WE ARE THINKING ABOUT YOU SO VERY MUCH. YOUR LOVED ONES WERE DARING AND BRAVE AND THEY HAD THAT SPECIAL GRACE, THAT SPECIAL SPIRIT THAT SAYS: GIVE ME A CHALLENGE AND I'LL MEET IT WITH JOY. THEY HAD A HUNGER TO EXPLORE THE UNIVERSE AND DISCOVER ITS TRUTHS. THEY WISHED TO SERVE AND THEY DID -- THEY SERVED ALL OF US.

WE HAVE GROWN USED TO WONDERS IN THIS CENTURY -- IT'S HARD TO DAZZLE US. BUT FOR 25 YEARS THE UNITED STATES SPACE PROGRAM HAS BEEN DOING JUST THAT. WE HAVE GROWN USED TO THE IDEA OF SPACE, AND PERHAPS WE FORGET THAT WE'VE ONLY JUST BEGUN, WE'RE STILL PIONEERS -- THEY, THE MEMBERS OF THE CHALLENGER CREW, WERE PIONEERS.

AND I WANT TO SAY SOMETHING TO THE SCHOOL CHILDREN OF AMERICA WHO WERE WATCHING THE LIVE COVERAGE OF THE SHUTTLE'S TAKEOFF. I KNOW IT'S HARD TO UNDERSTAND BUT SOMETIMES PAINFUL THINGS LIKE THIS HAPPEN -- IT'S ALL PART OF THE PROCESS OF EXPLORATION AND DISCOVERY -- IT'S ALL PART OF TAKING A CHANCE AND EXPANDING MAN'S HORIZONS. THE FUTURE DOESN'T BELONG TO THE FAINT-HEARTED -- IT BELONGS TO THE BRAVE. THE CHALLENGER CREW WAS PULLING US INTO THE FUTURE -- AND WE'LL CONTINUE TO FOLLOW THEM.

I'VE ALWAYS HAD GREAT FAITH IN AND RESPECT FOR OUR SPACE PROGRAM — AND WHAT HAPPENED TODAY DOES NOTHING TO DIMINISH IT. WE DON'T HIDE OUR SPACE PROGRAM, WE DON'T KEEP SECRETS AND COVER THINGS UP, WE DO IT ALL UP FRONT AND IN PUBLIC. THAT'S THE WAY FREEDOM IS, AND WE WOULDN'T CHANGE IT FOR A MINUTE.

WE'LL CONTINUE OUR QUEST IN SPACE. THERE WILL BE MORE SHUTTLE FLIGHTS AND MORE SHUTTLE CREWS AND, YES, MORE VOLUNTEERS, MORE CIVILIANS, MORE TEACHERS, IN SPACE. NOTHING ENDS HERE — OUR HOPES AND OUR JOURNEYS CONTINUE.

I WANT TO ADD THAT I WISH I COULD TALK TO EVERY MAN AND WOMAN WHO WORKS FOR NASA OR WHO WORKED ON THIS MISSION AND TELL THEM: YOUR DEDICATION AND PROFESSIONALISM HAVE MOVED AND IMPRESSED US FOR DECADES, AND WE KNOW OF YOUR ANGUISH. WE SHARE IT.

THERE'S A COINCIDENCE TODAY. ON THIS DAY 390 YEARS AGO, THE GREAT EXPLORER SIR FRANCIS DRAKE DIED ABOARD SHIP OFF THE COAST OF PANAMA. IN HIS LIFETIME THE GREAT FRONTIERS WERE THE OCEANS, AND A HISTORIAN LATER SAID, "HE LIVED BY THE SEA, DIED ON IT, AND WAS BURIED IN IT." TODAY WE CAN SAY OF THE CHALLENGER CREW: THEIR DEDICATION WAS, LIKE DRAKE'S, COMPLETE.

THE CREW OF THE SPACE SHUTTLE CHALLENGER HONORED
US BY THE MANNER IN WHICH THEY LIVED THEIR LIVES.
WE WILL NEVER FORGET THEM, NOR THE LAST TIME WE SAW
THEM — THIS MORNING, AS THEY PREPARED FOR THEIR
JOURNEY, AND WAVED GOODBYE, AND "SLIPPED THE SURLY
BONDS OF EARTH" TO "TOUCH THE FACE OF GOD."

THANK YOU,

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THE WHITE HOUSE
WASHINGTON

January 28, 1986

MR. PRESIDENT:

Attached is the draft for your brief televised address from the Oval Office. The speech will be on a teleprompter. The remarks have been reviewed and approved by your Senior Staff.

Please return the draft to the Usher's Office after you are finished with your edits.


David Chew

(Noonan)
January 28, 1986
3:30 p.m.

PRESIDENTIAL REMARKS: DEATH OF SPACE SHUTTLE CHALLENGER CREW
TUESDAY, JANUARY 28, 1986

Ladies and gentlemen, I had planned to speak to you tonight to report on the State of the Union, but the events of earlier today have led me to change those plans. Today is a day for mourning, and remembering.

Nancy and I are pained to the core by the tragedy of the Shuttle Challenger. We know we share this pain with all of the people of our country. This is truly a national loss.

Nineteen years ago almost to the day, we lost three astronauts in a terrible accident on the ground. But we have never lost an astronaut in flight. We have never had a tragedy like this. And perhaps we have forgotten the courage it took for the crew of the shuttle. But they, the Magnificent Seven, were aware of the dangers -- and overcame them and did their jobs brilliantly.

We mourn seven heroes -- Michael Smith, Dick Scobee, Judith Resnik, Ronald McNair, Ellison Onizuka [oh-nih-ZOO-kuh], Gregory Jarvis, and Christa McAuliffe. We mourn their loss as a Nation, together.

To the families of the Seven: We cannot bear, as you do, the full impact of this tragedy -- but we feel the loss, and we are thinking about you so very much. Your loved ones were daring and brave and they had that special grace, that special spirit that says: Give me a challenge and I'll meet it with joy. They

had a hunger to explore the universe and discover its truths. They wished to serve and they did -- they served all of us.

We have grown used to wonders in this century -- it's hard to dazzle us. But for 25 years the United States space program has been doing just that. We have grown used to the idea of space, and perhaps we forget that we've only just begun, we're still pioneers -- they, the members of the Challenger crew, were pioneers.

And I want to say something to the school children of America who were watching the live coverage of the shuttle's takeoff. I know it's hard to understand but sometimes painful things like this happen -- it's all part of the process of exploration and discovery -- it's all part of taking a chance and expanding man's horizons. The future doesn't belong to the faint-hearted -- it belongs to the brave. The Challenger crew was pulling us into the future -- and we'll continue to follow them.

I've always had great faith in and respect for our space program -- and what happened today does nothing to diminish it. We don't hide our space program, we don't keep secrets and cover things up, we do it all up front and in public. That's the way freedom is, and we wouldn't change it for a minute.

We'll continue our quest in space. There will be more shuttle ^{flights} and more shuttle crews and, yes, more volunteers, more civilians, more teachers, in space. Nothing ends here -- our hopes and our journeys continue.

I want to add that I wish I could talk to every man and woman who works for NASA or who worked on this mission and tell them: your dedication and professionalism have moved and impressed us for decades, and we know of your anguish. We share it.

There's a coincidence today. On this day 390 years ago, the great explorer Sir Francis Drake died aboard ship off the coast of Panama. In his lifetime the great frontiers were the oceans. And a historian later said, "He lived by the sea, died on it, and was buried in it." Today we can say of the Challenger Crew: their dedication was, like Drake's, complete.

The crew of the space shuttle Challenger honored us by the manner in which they lived their lives. We will never forget them, nor the last time we saw them -- this morning, as they prepared for their journey, and waved goodbye, and "slipped the surly bonds of earth" to "touch the face of God."

Thank you.

WHITE HOUSE STAFFING MEMORANDUM

DATE: 1/28/86 ACTION/CONCURRENCE/COMMENT DUE BY: ASAP

SUBJECT: REMARKS: DEATH OF SPACE SHUTTLE CHALLENGER CREW

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MILLER	<input type="checkbox"/>	<input type="checkbox"/>	RYAN	<input type="checkbox"/>	<input type="checkbox"/>
BUCHANAN	<input type="checkbox"/>	<input type="checkbox"/>	SPEAKES	<input type="checkbox"/>	<input type="checkbox"/>
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REMARKS: Attached are the remarks the President is planning to make this afternoon. Please check for any factual inaccuracies as quickly as possible. Please give your comments directly to Ben Elliott, with an info copy to my office. Thanks.

RESPONSE: The NSC Staff has reviewed the attached Presidential remarks and has made a number of suggested changes.

William F. Martin
 William F. Martin
 Executive Secretary

cc: David L. Chew

David L. Chew
 Staff Secretary
 Ext. 2702

(Noonan)
January 28, 1986
Draft

PRESIDENTIAL REMARKS: DEATH OF SPACE SHUTTLE CHALLENGER CREW
TUESDAY, JANUARY 28, 1986

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Nancy, ~~and I are pained to the core by~~ ^{and all Americans have suffered a terrible loss because} the tragedy of the Shuttle Challenger. ~~We know we share this pain with all of the people of our country.~~ This is truly a national loss.

^{thirteen years ago, almost to the day, we lost 3rd astronaut in a terrible accident}
~~In more than a quarter century of the United States space program, we have never lost an astronaut in flight. We have never had a tragedy like this. And perhaps we have forgotten the courage it took for the crew of the shuttle. But they, the Magnificent Seven, were aware of the dangers -- and did their jobs brilliantly.~~
^{Part, until today}
^{they met their challenge head on and overcame them like those of the astronaut corps who have flown before them}

We mourn seven heroes -- Michael Smith, Francis Scobee, Judith Resnick, Ronald McNair, Ellison Onizuka, Gregory Jarvis and Christa McAuliffe. ^{each in our own way, individually} We mourn their loss, ^{and we mourn them} as a Nation, together.

To the families of the Seven: We cannot bear, as you do, the full impact of this tragedy -- but we feel the loss, and we are thinking about you so very much. Your ^{loved ones} ~~relatives~~ were daring and brave and they had that special grace, that special spirit that said: Give me a challenge and I'll meet it with joy. They had a hunger to explore the universe and discover its truths. They wished to serve and they did -- they served all of us.

We have grown used to wonders in this century -- it's hard to dazzle us. But for 25 years the United States space program has been doing just that. We have grown used to the idea of space, and perhaps we forget that we've only just begun, we're still pioneers -- they the members of the Challenger crew, were pioneers.

And I want to say something to the ^{school} children of America who were watching the live coverage of the shuttle's takeoff. I know it's hard to understand but sometimes painful things like this happen -- it's ~~is~~ part of the process of exploration and discovery -- it's ~~is~~ part of taking a chance and expanding man's horizons. The future doesn't belong to the faint-hearted -- it belongs to the brave, ^{to the bold, and to the daring. They were American's best} The Challenger crew was pulling us into the future -- and we'll continue to follow them. X

I've always had great faith in and respect for our space program -- and what happened today does nothing to diminish it. We don't hide our space program, we don't keep secrets and cover things up, we do it all up front, ~~and~~ in public. ^{for all to see.} That's the way freedom is, and we wouldn't change it for a minute.

We'll continue our quest in space. There will be more ^{flights} shuttles and more shuttle crews and, yes, more ~~civilians~~, ^{volunteers, more} more ^{civilian} teachers, in space. Nothing ends here -- our hopes and our journeys continue.

I want to add that I wish I could talk to every man and woman who works for NASA or who worked on this mission, and tell them: your dedication and professionalism have moved and

impressed us for decades, and we know of your anguish, ^{we share it.} ~~but we're~~
~~sure you did your best to ensure a safe and successful flight.~~

There's a coincidence today. On this day 390 years ago the great explorer Sir Francis Drake died aboard ship off the coast of Panama. In his lifetime the great frontiers were the oceans. And a historian later said, "He lived by the sea, died on it, and was buried in it." Today we can say of the Challenger Crew: ~~that they~~ ^{that} ~~they~~ ^{they} ~~lived by space, died in it, and were buried in it.~~ ~~For~~ ^{for} their dedication was, like Drake's, complete. ^{ro}

The crew of the space shuttle Challenger honored us by the manner in which they lived their lives. We will never forget them, nor the last time we saw them -- this morning, as they prepared for their ^hjourney, and waved goodbye, and "slipped the surly bonds of earth" to ^htouch the face of God."

Thank you.

~~"reached out and~~

we know how
rough this day
has been
for you.

THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release

January 28, 1986

REMARKS OF THE PRESIDENT
ON SPACE SHUTTLE EXPLOSION

The Roosevelt Room

1:00 P.M. EST

THE PRESIDENT: Please, sit down. Well, I'm sure we all realize there's a little change in the procedures. I'd looked forward to coming in here and having a little session with you and some briefing, all very carefully sequestered until 9:00 tonight on the State of the Union, but in view of the tragedy that has befallen us, I don't think we'll do that.

I know that you're interested in keeping up with this, as I am also, to find out the extent of it and what has taken place, so I just wanted to say hello and I appreciate your coming here and maybe we can do the other thing another time.

Q Mr. President, can you give us your comments on the tragedy so that we can tell the American people your words, your thoughts?

THE PRESIDENT: Well, what can you say. It's a horrible thing that -- and all of us have witnessed it and actually seen it take place and I just can't rid myself of the thought of the sacrifice and the families that have been watching this also -- the families of those people onboard and what they must be going through at this point and I'm sure all of America is more than saddened but feels the great weight of this and wishes, as I do, that there was something we could do to make it easier for those who've suffered such a loss.

Q Mr. President, what is the latest word you've gotten? Have you gotten any definitive word on the condition --

THE PRESIDENT: Actually, no. We have no more information than you yourselves have and -- that are going down there. It's a case of having to wait.

Q Mr. President, do you want to see all systems halted until we find out explicitly what happened in this tragedy?

THE PRESIDENT: Well, I'm not a scientist. I do have confidence in the people that have been running this program and this is the first time, what is it, 50 some flights that something of this kind has happened. I certainly want everything done that can be done to find out how this could have happened and to ensure against its happening again. But there again, I have to say that I'm sure that the people that have to do with this program are determined to do that right now. And I'm quite sure also, when you look at the safety measures that sometimes those of us looking on have gotten a little impatient with when flights have been aborted and it hasn't seemed as if the situation -- well, it seems as if they were taking things too seriously. Now we know they weren't. And so I'm confident that there will be no flight until they are absolutely as certain as a human being can be that it is safe.

Q Mr. President, do you think it raises questions about having citizens aboard the Space Shuttle?

THE PRESIDENTS: well, they're all citizens and I don't think anyone's ever been on there that isn't a volunteer. I know

MORE

reasons why they, or someone like them should be included in flights of this kind. So, no -- that is the last frontier and the most important frontier we have to say that the space program has been most successful, most effective and -- I guess, we've been so confident of it that it comes as such a tremendous shock when something of this kind happens.

Q Will you still go ahead, sir, with your message tonight?

THE PRESIDENT: What?

Q Will you go ahead with your message tonight?

THE PRESIDENT: Yes, I feel that we -- things like that have to go on.

Q Mr. President, are you afraid there'll be any public backlash against the space program because of this tragedy?

THE PRESIDENT: I shouldn't think so and I would certainly do everything I could to express an opinion the other way. You know, we don't -- we have accidents in every line of transportation and we don't do away with those things. They've probably got a better safety record than we have out on the highways.

Q Mr. President, will you tell us --

Q Do you think it was a mistake to put the teacher onboard?

THE PRESIDENT: What?

Q Do you think it was a mistake to put the teacher onboard?

THE PRESIDENT: No. Again, as I say, this is a thing -- and this is what the whole space program is leading towards -- is actual use.

Q Mr. President, will you tell us exactly who brought you the news and exactly what you thought and said at that point?

THE PRESIDENT: We were all sitting in there, and I was preparing myself for your questions on the State of the Union Address when the Vice President and John Poindexter came into the room. And all they could say at the time was that they had received a flash that the space shuttle had exploded. And we immediately went into the adjoining room where I have a TV set to get on this, because there was no direct word and -- except that word that had -- being made public also. And there we saw the replaying and saw the thing actually happen. And it just was -- I say -- a very traumatic experience.

Q But how does that affect your State of the Union speech tonight? I mean, we were told you were going to give an upbeat -- "the State of the Union is good," you know, optimistic speech. This has got to cast a pall on it, doesn't it?

THE PRESIDENT: Yes, it sure does. And, certainly, there could be no speech without mentioning this. But you can't stop governing the nation because of a tragedy of this kind. So, yes, one will continue.

Q Mr. President --

Q -- philosophically, do you take some solace in the fact that over the years the American space program has been remarkably safe, that we've not lost as many people as we've been led to believe have been lost in the Soviet Union?

THE PRESIDENT: Well, I think we've all had a great pride in that. And it is a kind of -- well, it'd be something to cling to right now, although it doesn't lessen our grief at what has just taken place.

Q Mr. President, sending civilians in space is based on the assumption that it was routine to go into space, that it was now safe, even a teacher we could send up. Do you think that notion has now -- is now gone?

THE PRESIDENT: Well, what would you -- what could you say, other than that here was a program that had a 100-percent safety record? The only other fatality did not take place in a space shuttle. It took place in an old-type of capsule --

Q Mr. President --

MR. BUCHANAN: One question. One more question.

Q -- so many children have -- you know -- been a part of this particular space shuttle because of the teacher. And they're doing classrooms. Can you do something to help help them -- say something that would help them to understand --

THE PRESIDENT: I think people closer to them have got to be doing that. As I say, the world is a hazardous place, always has been, in pioneering. And we've always known that there are pioneers that give their lives out there on the frontier. And now this has happened. It probably is more of a shock to -- to all of us because of the fact that we see it happen now and -- thanks to the media -- not just hearing about it as if something that happened miles away. But I think -- I think those that have to do with them and -- must, at the same time, make it plain to them that life does go on and -- and you don't back up and quit some worthwhile endeavor because of tragedy.

Q Do you have any --

MR. BUCHANAN: -- got some folks in the Oval Office that are waiting --

THE PRESIDENT: Oh.

Q Sir, do you have any special thoughts about Christa McAuliffe, who, I think it was in this room, was named as the first teacher? What are your thoughts about her today?

THE PRESIDENT: I can't get out of my mind her husband and her children. But then that's true of the families of the others. Theirs probably more so because the families of the others had been a part of this whole program and knew that they were in a hazardous occupation. But knowing that they were there and watching, this just is -- well, your heart goes out to them.

THE PRESS: Thank you.

END

1:07 P.M. EST

HIGH FLIGHT

John Gillespie Magee, Jr.

Oh! I have slipped the surly bonds of Earth
 And danced the skies on laughter-silvered wings;
 Sunward I've climbed, and joined the tumbling mirth
 Of sun-split clouds—and done a hundred things
 You have not dreamed of—wheeled and soared and swung
 High in the sunlit silence. Hov'ring there,
 I've chased the shouting wind along, and flung
 My eager craft through footless halls of air. . . .

Up, up the long, delirious, burning blue
 I've topped the wind-swept heights with easy grace,
 Where never lark, or even eagle, flew;
 And, while with silent, lifting mind I've trod
 The high untrespassed sanctity of space,
 Put out my hand, and touched the face of God.

(Written by a 19-year-old American volunteer with
 the Royal Canadian Air Force, who was killed in
 training December 11, 1941)

THE CELESTIAL SURGEON

Robert Louis Stevenson

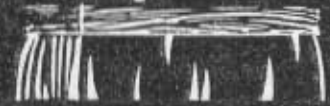
If I have faltered more or less
 In my great task of happiness;
 If I have moved among my race
 And shown no glorious morning face;
 If beams from happy human eyes
 Have moved me not; if morning skies,
 Books, and my food, and summer rain
 Knocked on my sullen heart in vain:—
 Lord, thy most pointed pleasure take
 And stab my spirit broad awake;
 Or, Lord, if too obdurate I,
 Choose thou, before that spirit die,
 A piercing pain, a killing sin,
 And to my dead heart run them in!

Teacher in Space Project

Teacher in Space



**YOUR
INVITATION FROM
SPACE... Come aboard
for a history-making educational
opportunity to instruct using the first
lessons taught live from the Space Shut-
tle. Teacher in Space, Christa McAuliffe,
will teach two lessons that will be broad-
cast live via satellite to the classrooms
and homes of television viewers from the
Shuttle Challenger. The materials in this
publication have been designed to help
teachers and other adults maximize the
learning experiences which will grow
from the lessons and other educa-
tional events scheduled on
Mission 51-L's his-
toric flight!**



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PROJECT BACKGROUND

Plans to make a teacher the first private citizen to fly on the Space Shuttle began with President Ronald Reagan's announcement of the program on August 27, 1984. Christa McAuliffe will fulfill that decision on Shuttle Mission 51-L slated for launch in January 1986. McAuliffe's flight is a part of NASA's Space Flight Participant Program which is designed to expand Shuttle opportunities to a wider segment of private citizens. Among her challenges will be communication of the experience and flight activities to the public through educational and public information programs.

The selection of Christa McAuliffe as primary candidate and Barbara Morgan as backup culminated a search process coordinated for NASA by the Council of Chief State School Officers. Some 11,000 teachers applied for the opportunity to become the Teacher in Space. State, territorial, and agency review panels each selected two nominees for a nomination slate of 104. These nominees are continuing to serve as NASA's educational Space Ambassadors in their areas.

MISSION BACKGROUND

The Crew:

Commander—Francis R. (Dick) Scobee

Pilot—Michael J. Smith

Mission Specialist—Judith A. Resnick, Ph.D.

Mission Specialist—Ellison S. Onizuka

Mission Specialist—Ronald E. McNair, Ph.D.

Payload Specialist—Gregory Jarvis (Hughes Communications)

Space Flight Participant (Teacher-Observer)—S. Christa McAuliffe

The Flight, Payload, and Experiments:

Shuttle Mission 51-L will be a six-day mission. Launch is scheduled for January 22, 1986 from the Kennedy Space Center, and landing is scheduled for January 28 at the same site. The mission carries two major payloads, the TDRS-B (Tracking and Data Relay Satellite-B) and the Spartan-Halley carrier. On the first flight day, the crew will deploy TDRS-B; on the third flight day, the Spartan-Halley carrier, which will be retrieved on the fifth flight day. In addition, the crew will be conducting and monitoring a series of scientific experiments during the Mission. McAuliffe may describe these activities during her live lessons from space.

The ten finalists announced on July 1, 1985 traveled to NASA's Johnson Space Center in Houston, Texas and Marshall Space Flight Center in Huntsville, Alabama for briefings and testing. A NASA Evaluation Committee interviewed them in Washington, D.C., and the final selection announcement was made by Vice President George Bush on July 19, 1985. Christa McAuliffe and Barbara Morgan began their training on September 9 at the Johnson Space Center.

The remaining eight finalists are working with NASA on a one-year assignment at Headquarters and NASA research centers. In August, they worked with McAuliffe and Morgan to design the lessons which the Teacher in Space will teach live during the mission. Their continued input will create an abundance of new space-related materials for the classroom.

Payload:

The TDRS-B will join TDRS-1 in geosynchronous orbit to provide communication and data links with the Space Shuttle and satellites. TDRS-2 (WEST) will be stationed over the Pacific; TDRS-1 (EAST) is stationed over the Atlantic.

The Spartan (Shuttle Pointed Autonomous Research Tool for Astronomy) mission is designed to observe the ultraviolet spectrum of Comet Halley. Two ultraviolet spectrometers will be mounted on the Spartan carrier which will scan the tail of Halley on each of its orbits. The Spartan will be deployed and retrieved with the Remote Manipulator System (RMS) and stowed in the payload bay for the remainder of the Shuttle flight.

The Shuttle Student Involvement Program, a competition managed by the National Science Teachers Association with NASA to encourage student-designed experiments that can qualify to fly on missions, will be flying three experiments on this mission:

- Chicken Embryo Development in Space* by John C. Vellinger of Lafayette, Indiana.
- The Effects of Weightlessness on Grain Formation and Strength in Metals* by Lloyd C. Bruce of St. Louis, Missouri.
- Utilizing a Semi-Permeable Membrane to Direct Crystal Growth* by Richard S. Cavoli of Marlboro, New York.

PREFACE

NASA is pleased to provide this *Teacher's Guide* to extend the learning experiences evolving from the *Teacher in Space Project*. The publication is the product of a team effort by NASA, the National Science Teachers Association (NSTA), the National Council for the Social Studies (NCSS), and curriculum professionals. It is based upon ideas contributed by the *Teacher in Space* finalists, the Space Ambassadors, and other practicing teachers.

We have sought to publish practical and mind-stretching teaching ideas, plans, and resources for a variety of curriculum areas and grade levels — all growing from aspects of Mission 51-L. The capsules and detailed activities are concept-based and are designed to strengthen critical thinking and problem-solving skills. We hope this *Guide* will help all of you, the people who teach live on Earth every day.

NASA wishes to thank the following individual teachers who wrote activities for this *Guide*: Charles Frederick, Marilyn Kirschner, Beverly Sutton, and Howard White. We wish to acknowledge the contributions of the following: William D. Nixon, *Teacher in Space Project Manager*; Dr. Doris K. Grigsby and Muriel M. Thorne of NASA Headquarters Educational Affairs; Dr. Helenmarie Hofman, NSTA; Frances Haley, NCSS; and Dr. June Scobee, University of Houston—Clear Lake. We also thank Joan Baraloto Communications, Inc. for coordinating the preparation, development, and publication of this guide.

Thomas P. DeCair

Thomas P. DeCair/Associate Administrator for External Relations, NASA



DESCRIPTION OF THE LIVE LESSONS

The Ultimate Field Trip

This lesson is based on a quotation by *Teacher in Space* Christa McAuliffe who described her opportunity to go into space as "the ultimate field trip."

Viewer Objectives:

1. To observe the major areas of the Shuttle and describe their functions
2. To list and describe the major kinds of activities crewmembers perform aboard the Shuttle
3. To compare and contrast daily activities in microgravity with those on Earth

Video Lesson Description:

This lesson from space will begin in the flight deck area of the Challenger where Christa McAuliffe will introduce the commander and pilot and will point out the Shuttle controls, computers, and payload bay.

When she arrives at the middeck, McAuliffe will show viewers the kinds of equipment and processes which help human beings live comfortably and safely in the microgravity environment of the Shuttle.

TEACHING-RELATED EVENTS OF MISSION 51-L

Live Lessons:

As part of the 51-L Mission, the *Teacher in Space*, Christa McAuliffe, will teach two live lessons from space. These lessons are currently scheduled on the sixth day of the Mission at 11:40 a.m. and 1:40 p.m. Eastern Standard Time.

PBS Broadcast:

The Public Broadcasting Service (PBS) will carry both lessons via Westar IV. PBS will offer the programs to member stations that will be requested to preempt regular classroom programming to carry the lessons live. Specific information about the PBS transmission may be obtained from local PBS stations or by writing to Elementary and Secondary Programs, PBS, 475 L'Enfant Plaza, SW, Washington, D.C. 20024 or calling 202/488-5080.

Mission Watch

(Satellite Broadcast to Schools):

NASA will make available to schools equipped with satellite dish

Where We've Been, Where We're Going, Why?

Viewer Objectives:

1. To explain some advantages and disadvantages of manufacturing in a microgravity environment
2. To describe spinoffs and other benefits which have evolved from the space program
3. To list ways in which the modular Space Station would change the lives of human beings

Video Lesson Description:

As this lesson from space begins, Christa McAuliffe will refer to models of the Wright Brothers' plane and of a proposed NASA Space Station to help viewers recall that only 82 years separate that early flight and today's life in space.

McAuliffe will discuss the reasons we are living and working in space, covering astronomy, Earth observations, experiments on-board the Shuttle, satellites on the mission, materials processing, and technological advances.

antennas daily activities conducted aboard the 51-L Mission. This effort will be coordinated by Classroom Earth, an organization dedicated to direct satellite transmission to elementary and secondary schools. Participating schools will receive in advance educational materials, television schedule, orbital map, Shuttle Prediction and Recognition Kit (SPARK), and other information that will prepare teachers and students to follow all aspects of the 51-L Mission. Barbara Morgan, backup candidate, will act as moderator for these daily special broadcasts. Specific information related to "Mission Watch" is available by writing to Classroom Earth, Spring Valley, IL 61362 or by calling 815/664-4500. Information can also be accessed on the National Computer Bulletin Board (300 baud) 817/526-8686.

Filmed Activities:

In addition to live lessons, McAuliffe will conduct a number of demonstrations during the flight. These filmed activities will be used as part of several educational packages to be prepared and distributed after the Mission.

KEY MISSION-RELATED TERMS

Comet Halley — comet which reappears near Earth approximately every 76 years

Communication satellite — orbiting spacecraft which sends messages, connects computers, and carries radio and television programs via microwaves

EMU (Extravehicular Mobility Unit) — space suit with its own portable life-support system

51-L — number of the Mission carrying the Teacher in Space project

Flight deck — upper Shuttle deck housing the controls and computers for the commander and pilot

Geosynchronous orbit — path 35,680 km from Earth in which a satellite's speed matches exactly Earth's rotation speed, so that the satellite stays over the same location on the ground at all times

Microgravity — 1/10,000 of the gravity force on Earth

Middeck — living and work area of Shuttle located below flight deck

Mission control — a room at the Johnson Space Center in Houston, Texas from which the crew's activities are directed

Mission specialist — scientist on crew responsible for experiments and deploying satellites

Mission Watch — daily satellite program transmission highlighting Mission events

NASA — National Aeronautics and Space Administration

Orbiter — reusable manned component of Space Shuttle; there are four; Mission 51-L uses Challenger

Payload — cargo; equipment

Payload bay — large section of the Shuttle where the payloads are stored

Payload specialist — scientist named for flight by a company or country sponsoring a payload; specialist is certified for flight by NASA

Principal investigator (PI) — scientist who designs and directs a mission experiment

Simulator — training equipment which gives trainees opportunities to experience flight-like activities and sensation

Space Shuttle — four-part vehicle: a reusable orbiter, an expendable liquid propellant external tank, and two recoverable and reusable solid rocket boosters

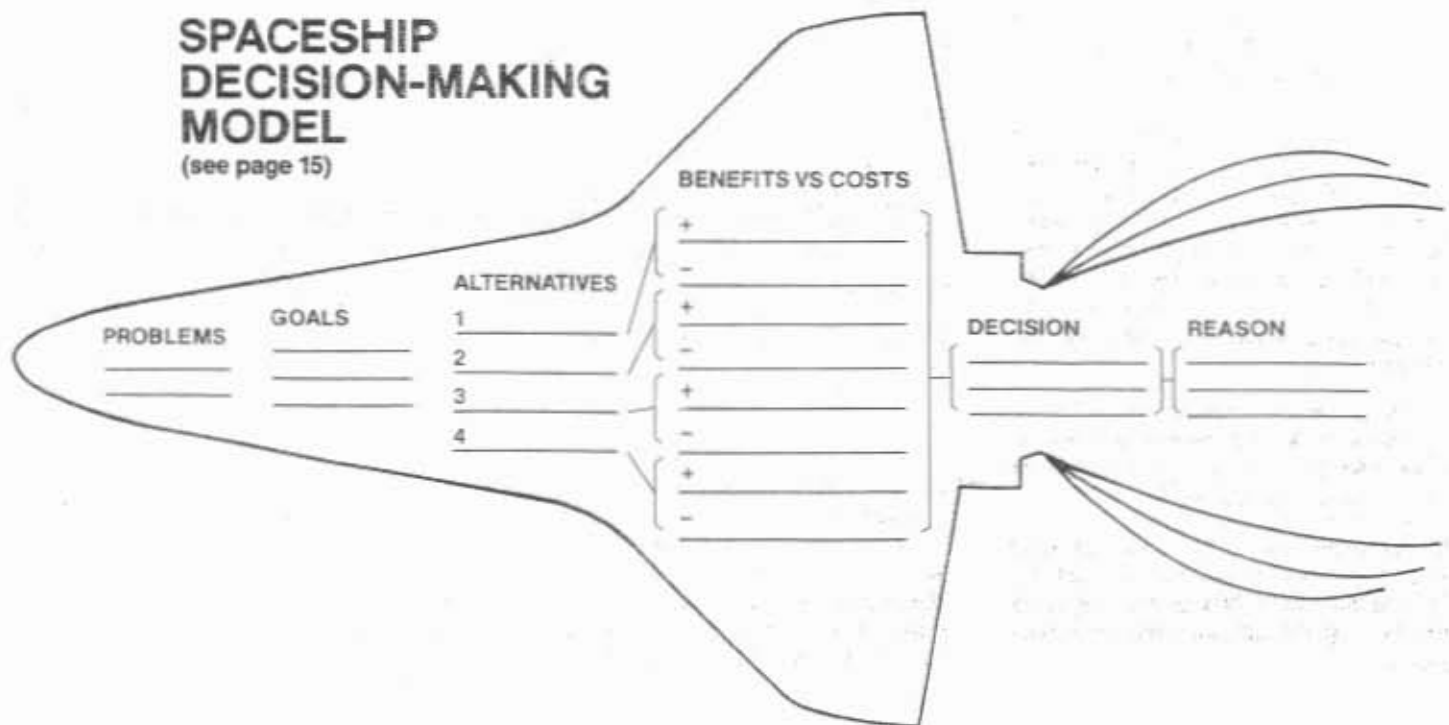
Spartan-Halley — payload designed to make observations of the ultraviolet spectrum of Comet Halley

Spinoffs — useful applications of space technologies different from their original aerospace function

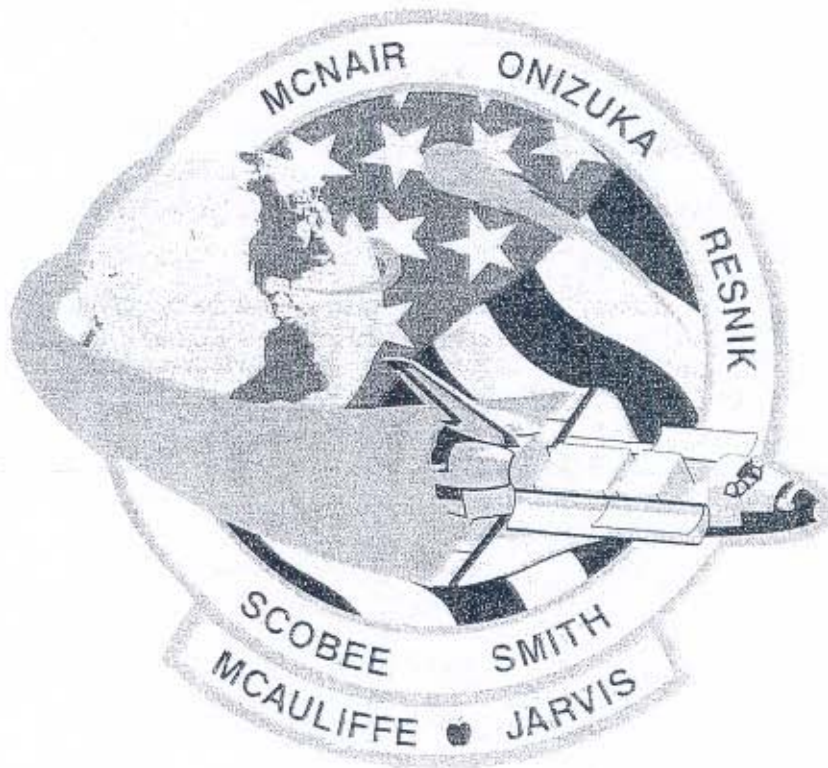
TDRS (Tracking and Data Relay Satellite) — a communication satellite deployed by NASA for its communication system

SPACESHIP DECISION-MAKING MODEL

(see page 15)



Space Shuttle Mission 51-L



Press Kit

January 1986

NASA News

National Aeronautics and
Space Administration

Washington, D.C. 20546
AC 202-453-8400

For Release:

RELEASE NO: 86-5

January 1986

TEACHER IN SPACE AND COMET HALLEY STUDY HIGHLIGHT 51-L FLIGHT

The launch of a high school teacher as America's first private citizen to fly aboard the Shuttle in NASA's Space Flight Participant Program will open a new chapter in space travel when Challenger lifts off on the 25th Space Shuttle mission.

A science payload programmed for 40 hours of comet Halley observations and the second of NASA's Tracking and Data Relay Satellites (TDRS-B) will be aboard for Challenger's 10th flight, targeted for launch at 3:43 p.m. EST on Jan. 24.

Challenger's liftoff will mark the first use of Pad 39-B for a Shuttle launch. Pad B was last used for the Apollo Soyuz Test Project in July 1975 and has since been modified to support the Shuttle program.

Four Shuttle veterans will be joined by rookie astronaut Michael Smith, teacher observer Christa McAuliffe and Hughes payload specialist Gregory Jarvis for a mission that will extend just beyond 6 days.

Commanding the seven-member crew will be Francis R. Scobee, who served as pilot aboard Challenger on mission 41-C. Michael Smith will be 51-L Pilot.

-more-

Mission specialists Judith Resnik, Ellison Onizuka and Ronald McNair each will be making their second trip into space.

Challenger will be launched into a 177-statute-mile circular orbit inclined 28.45 degrees to the equator for the 6-day, 34-minute mission. The orbiter is scheduled to make its end-of-mission landing on the 3-mile-long Shuttle Landing Facility at Kennedy Space Center.

Deployed on the first day of the flight, TDRS-B will join TDRS-1 in geosynchronous orbit to provide high-capacity communications and data links between Earth and the Shuttle, as well as other spacecraft and launch vehicles.

After deployment from the Shuttle cargo bay, TDRS-B will be boosted to geosynchronous transfer orbit by the Inertial Upper Stage (IUS). Its orbit will be circularized and it will be positioned over the Pacific Ocean at 171 degrees west longitude.

TDRS-1, launched from Challenger in April 1983 on the sixth Space Shuttle flight, is located over the Atlantic Ocean at 41 degrees west longitude.

With the addition of the second satellite, realtime coverage through the single ground station at White Sands, N.M., is expected to be available for about 85 percent of each orbit of a user spacecraft.

The TDRS satellites, built by TRW Space Systems, are owned by Space Communications Company (SPACECOM) and leased by NASA for a period of 10 years. A third TDRS satellite will be launched on a later mission to serve as an in-orbit spare.

Spartan-Halley is the second payload in the NASA-sponsored Spartan program for flying low-cost experiment packages aboard the Shuttle.

The scientific objective of Spartan-Halley is to measure the ultraviolet spectrum of comet Halley as the comet approaches the point of its orbit that will be closest to the sun.

The Spartan mission peculiar support structure will be deployed from the Shuttle cargo bay and retrieved later in the mission for return to Earth.

Ultraviolet measurements and photographs of comet Halley will be made by instruments on the Spartan support structure during 40 hours of free flying in formation with the Shuttle.

Several middeck experiments, including those associated with the Teacher in Space Project, and three student experiments complete Challenger's payload manifest.

Teacher observer Christa McAuliffe will perform experiments that will demonstrate the effects of microgravity on hydroponics, magnetism, Newton's laws, effervescence, chromatography and the operation of simple machines.

The Teacher in Space experiments will be filmed for use after the flight in educating students.

McAuliffe also will assist in operating three student experiments being carried aboard Challenger. These experiments include a study of chicken embryo development in space, research on how microgravity affects a titanium alloy and an experiment in crystal growth.

The Fluid Dynamics Experiment, a package of six experiments, will be flown on the middeck. They involve simulating the behavior of liquid propellants in low gravity. The fluid dynamics experiments will be conducted by Hughes payload specialist Gregory Jarvis.

Among the fluid investigations will be simulations to understand the motion of propellants during Shuttle frisbee deployments, which have been employed for the Hughes Leasat satellites.



Another middeck experiment will be the Radiation Monitoring Experiment consisting of handheld and pocket monitors to measure radiation levels at various times in orbit. This is the seventh flight for the RME.

Challenger will perform its deorbit maneuver and burn over the Indian Ocean on orbit 96 with landing at Kennedy occurring on orbit 97 at a mission elapsed time of 6 days, 34 minutes.

Touchdown on the Florida runway should come at 4:17 p.m. EST on Jan. 30.

(END OF GENERAL RELEASE; BACKGROUND INFORMATION FOLLOWS.)

GENERAL INFORMATION

NASA Select Television Transmission

NASA-Select television coverage of Shuttle mission 51-L will be carried on a full satellite transponder:

Satcom F-2R, Transponder 13, C-Band
Orbital Position: 72 degrees west longitude
Frequency: 3954.5 MHz vertical polarization
Audio Monaural: 6.8 MHz

NASA-Select video also is available at the AT&T Switching Center, Television Operation Control in Washington, D.C., and at the following NASA locations:

NASA Headquarters, Washington, D.C.
Langley Research Center, Hampton, Va.
John F. Kennedy Space Center, Fla.
Marshall Space Flight Center, Huntsville, Ala.
Johnson Space Center, Houston, Texas
Dryden Flight Research Facility, Edwards, Calif.
Ames Research Center, Mountain View, Calif.
Jet Propulsion Laboratory, Pasadena, Calif.

The schedule for television transmissions from the orbiter and for the change-of-shift briefings from Johnson Space Center will be available during the mission at Kennedy Space Center, Marshall Space Flight Center, Johnson Space Center and NASA Headquarters.

The television schedule will be updated daily to reflect changes dictated by mission operations. Television schedules also may be obtained by calling COMSTOR (713/280-8711). COMSTOR is a computer data-base service requiring the use of a telephone modem.

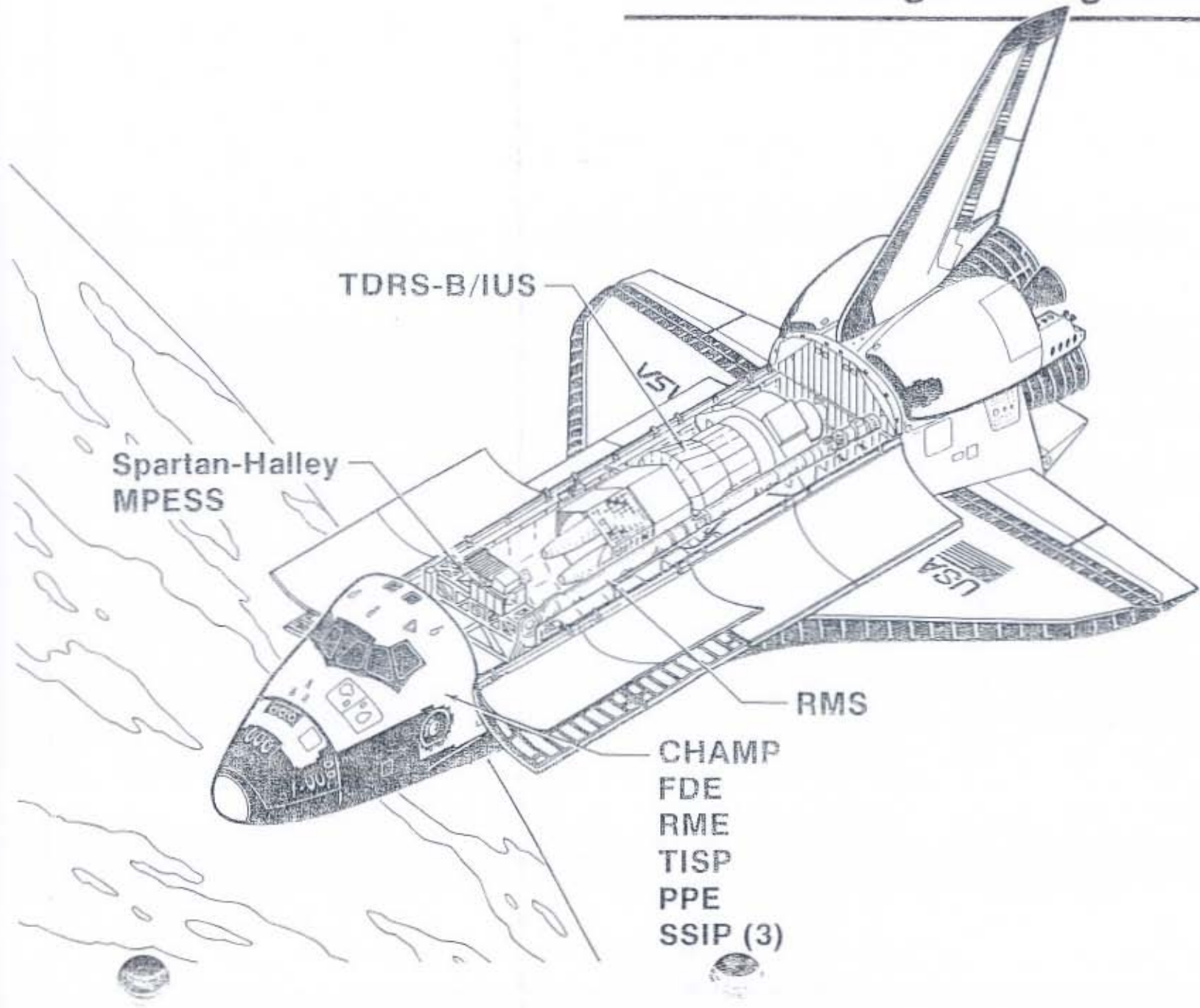
Special Note to Broadcasters

Beginning Jan. 22 and continuing throughout the mission, approximately 7 minutes of audio interview material with the crew of 51-L will be available to broadcasters by calling 202/269-6572.

Briefings

Flight control personnel will be on 8-hour shifts. Change-of-shift briefings by the off-going flight director will occur at approximately 8-hour intervals.

National STS Program STS 51-L Cargo Configuration



374-51

SECRETARY OF LABOR
WASHINGTON, D. C. 20210

WILLIAM E. BROCK

January 30, 1986

The President
The White House
Washington, D. C 20500

Dear Mr. President:

I know I am unusually sensitive to death at this time, but I do want to thank you for the special decency and grace with which you have led the people of a nation still beset by the shock of these past few days.

Your remarks after the loss of Challenger, and at the Memorial in Houston today, were beautiful. We are so blessed to have a President who can help us to recognize our oneness with each other and with God, and to share our grief, even as we raise again our eyes to the future.

Thank you.

Very truly yours,



WILLIAM E. BROCK

WEB:cb

Rev. F. J. B.

P.S. I hope me say to meet you face to
face

Macon County
North Carolina
Board of County Commissioners

J. B. B.



January 28, 1986

E. J. G. W.

Dear Mr. President —

I listen to you words as you
spoke to the nation about
the tragic accident of the
space shuttle when seven

→

great American deed! You
made me proud to be
an American. Even though
I disagree with many
of your policies and political
positions, you make all
Americans proud on such
an occasion. God bless you
and our nation. Rev. Bob Wallin



45 Rockefeller Plaza, Suite 2216, New York, NY 10020 • (212) 246-3366

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January 31, 1986

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PROOZ

Mr. Ronald Reagan
President of the United States
of America
The White House
Washington D.C.

Mr. President,

In your address to the nation on the occasion of the tragedy
at Cape Canaveral, you drew parallels between the loss of the lives
of the crew aboard the Challenger and the death of Sir Francis
Drake off the coast of Panama "390 years ago".

Sir Francis Drake was an English pirate, who delighted in the
slaughter of the civilian citizens of the colonial city of Porto-
belo. Gold and silver were stockpiled in this Atlantic port, a-
waiting shipment to Spain. It was therefore a prime target for the
greed-motivated expeditions of men like Drake. It was in an attempt
to loot, destroy and ravage the city and it's population of nuns,
women, children and missionaries, that Drake was happily annihilated.

Because the legends of English pirates have always been ro-
manticized in Anglo-American history books. I am not surprised to
occasionally encounter this misconception. However, to further the
credence of this gross inaccuracy in a presidential address, let
alone compare the ambitions of a pirate to those that motivated our
lost astronauts can only be the result of careless historical re-
search. I respectfully suggest you reprimand those responsible. !

Feb 24 86 Buchanan memo to Allen Weinstein
(cont'd) Los Romances

-PAGE II-

I find the portrayal of a pirate as a figure of history to be admired and eulogized in your speech on the occasion of the deaths of seven genuine heroes, to be insulting to the memories of those astronauts and offensive to their families, as well as to the memories of those people massacred on that day in Portobelo and to all the people of Panama.

Respectfully,

A large, stylized handwritten signature in black ink, consisting of several loops and a long horizontal line extending to the right.

Charles F. Brannan
Photo Editor/NY

U.S. NEWS & WORLD REPORT

1036 PAPWORTH AVE
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1831 EST

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WASHINGTON, D. C. 20210

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The White House
Washington, D. C 20500


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Thank you.

Very truly yours,



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WEB:cb

Dot # 7 B

P.S. I hope we may meet you face to face
Mecklenburg County
North Carolina
Board of County Commissioners

C. Bash



January 28, 1986

E 3746-70

Dear Mr. President —

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45 Rockefeller Plaza, Suite 2216, New York, NY 10020 • (212) 246-3366

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January 31, 1986

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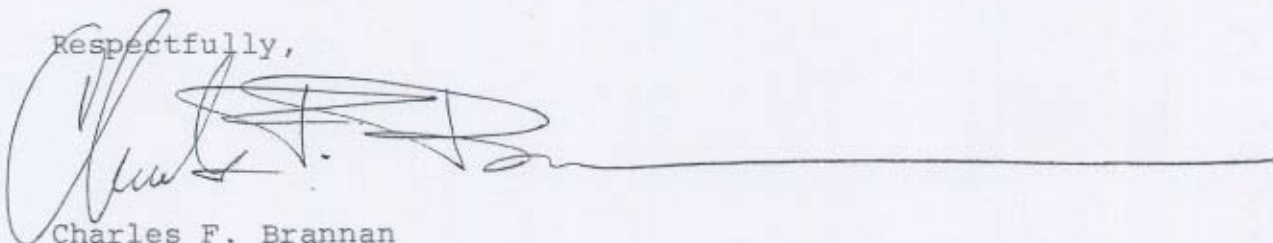
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Feb 24 86 Buchanan memo to Allen Weinstein
(Contes, Soc) Remembrance

-PAGE II-

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Charles F. Brannan
Photo Editor/NY



Doc. # 70

4-038269S028 01/28/86

ICS IPMBNGZ CSF

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PMS PRESIDENT RONALD REAGAN

WHITE HOUSE DC 20500

DEAR MR. PRESIDENT, I SUPPORT YOUR DECISION IN CONTINUING AMERICAS
EFFORTS IN THE SPACE PROGRAM AS A TEACHER I ENCOURAGE THE OPPORTUNITY
OF ENLISTING AS A SPACE PASSENGER ON ANY FUTURE MISSION AS A WIFE
MOTHER AND DAUGHTER I GRIEVE FOR THE TRAGIC LOSS OF SEVEN SPLENDID
AMERICANS SINCERELY

MARY HELEN LAGASSE

1036 PAPWORTH AVE

METAIRIE LA 70005

1831 EST