BOY SCOUTS OF AMERICA
COMMUNICATION MERIT BADGE

Troop 53
January 2015

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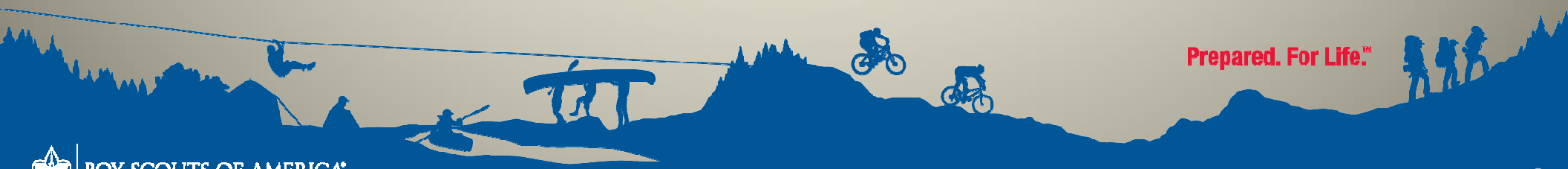
Prepared. For Life.™

Communications and Technology

Week 3

19 JAN 2015



Agenda

Week 1 – 1c Intro / Reqs / Course Schedule

Week 2 – 2 a. Self intro or b. Product intro

Week 3 – 3 Post Interview discussion, 5m speeches

Week 4 – 4 5m speeches, Scout interview and intro

Week 5 – 9 3 Communication Careers presentations

Week 6 – 8 Campfire Planning

Week 7 – 5, 6, 7 - discuss / turn in projects for 5, 6, 7

Week 8 – make ups

Week 9 – make ups

Last Week

Last Week:

Listening

Requirement 3 – 5 Minute Speeches

Today:

Requirement 4 – Interviewing a person

Requirement 5 – Attend meeting / Listening skills

Challenger Case Study / reqs 2, 3 speeches (cont)

Agenda: 2015 / Tr. 53

JANUARY 2015 (theme: Communications)

3 Adult Leader Meeting

5 Troop Meeting – Communications – Req. # 1 –

12 Troop Meeting – Communications – Req. # 2 –

17-18 Troop Outing – Eagle Rock – PCT – Los Coyote Indian Reservation - backpack

17-18 Venture Outing – Eagle Rock – PCT – Los Coyote Indian Reservation - backpack

19 Troop Meeting – Communications – Req. # 3 – C of H cut off

24 Service Project – (8:00 a.m. – 1:00 p.m.) Camp Balboa

26 Patrol Leaders Council meeting – 6:15 p.m.

26 Troop Meeting – Court of Honor Prep

FEBRUARY 2015 (theme: Communications)

1 Scout Sunday

2 Troop Meeting – Court of Honor

7 Adult Leader Meeting -

9 Troop Meeting – Communications – Req. # 4

14-16 Troop Outing – Snow Camping

14-16 Venture Outing – Snow Camping

FEBRUARY 2015 (theme: Communications) (continued)

16 No Troop Meeting

23 Patrol Leaders Council Meeting – 6:15 p.m.

23 Troop Meeting – Communications – Req. # 5

28 Fund Raiser – Spaghetti Dinner – North Park Lions Club

MARCH 2015 (theme: Communications)

1 Lemon Grove Rod & Gun Club Shooting Activity

2 Troop Meeting – Communications – Req. # 5 (continued)

7 Adult Leader Meeting

9 Troop Meeting – Communications – Req. # 6

16 Troop Meeting – Communications – Req. # 7

21-22 Troop Outing – Indian Hill – Anza Borrego Desert – backpack

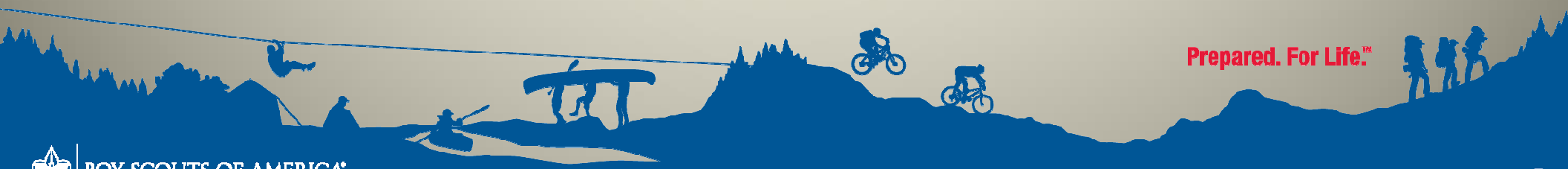
21-22 Venture Outing – Goat Canyon – Carrizo Gorge Train Trestle - backpack

23 Troop Meeting – Communications – Req. # 8 - Troop Elections –

28 Service Project - NPCC

30 PLC Meeting – 6:15 p.m.

30 Troop Meeting –- Scout Fair Preparation - (H-Trellis Building/lashings) Communications - Req. # 9



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Next Week

Next session (after Court of Honor):

Requirement 6 – Teaching a skill (EDGE)

Requirement 7 – Writing assignment

Looking ahead:

Continuation of Scout presentations for reqs 2, 3

Requirement 8 – Plan and MC an event

Requirement 9 – Career opportunities

Communications and Technology

Communication Merit Badge Requirements

Requirement #4

4. Interview someone you know fairly well, like, or respect because of his or her position, talent, career, or life experiences.

- Listen actively to learn as much as you can about the person. Then prepare and deliver to your counselor an introduction of the person as though this person were to be a guest speaker, and include reasons why the audience would want to hear this person speak.

☐ Show how you would call to invite this person to speak

Requirement = In class introduction; organized with level of detail discussed

Requirement #5

5. Do the following:

☐ Attend a public meeting (city council, school board, debate) approved by your counselor where several points of view are given on a single issue.

☐ Practice active listening skills and take careful notes of each point of view.

- Prepare an objective report that includes all points of view that were expressed, and share this with your counselor.

Requirement = Scout gets approval first; I need notes and report

The Interview

Requirement #4

Interview Tips

What is the purpose of the interview?

- Find out more about the person
- Find out what their opinions are on things you care about?
- Interviewing person for a job?
- Possibly to manage a project for you?
- What their skills are to help you with an Eagle (or other) Project?

Interview Sample Questions

ALWAYS TAKE NOTES TO REFER BACK TO LATER

- What is your full name and professional title?
- What are your duties?
- Do you have a family?
- What are your hobbies?
- Did you go to college? Where?
- What has been your most difficult challenge in life?
- If you could plan a week to go anywhere, where would it be?
- Why is it so important to you?
- Where have you lived? Visited?

Questions?

Communications and Technology

Communication Case Study #1
The Space Shuttle Challenger
(1986)

What were the underlying causes?

History of Challenger

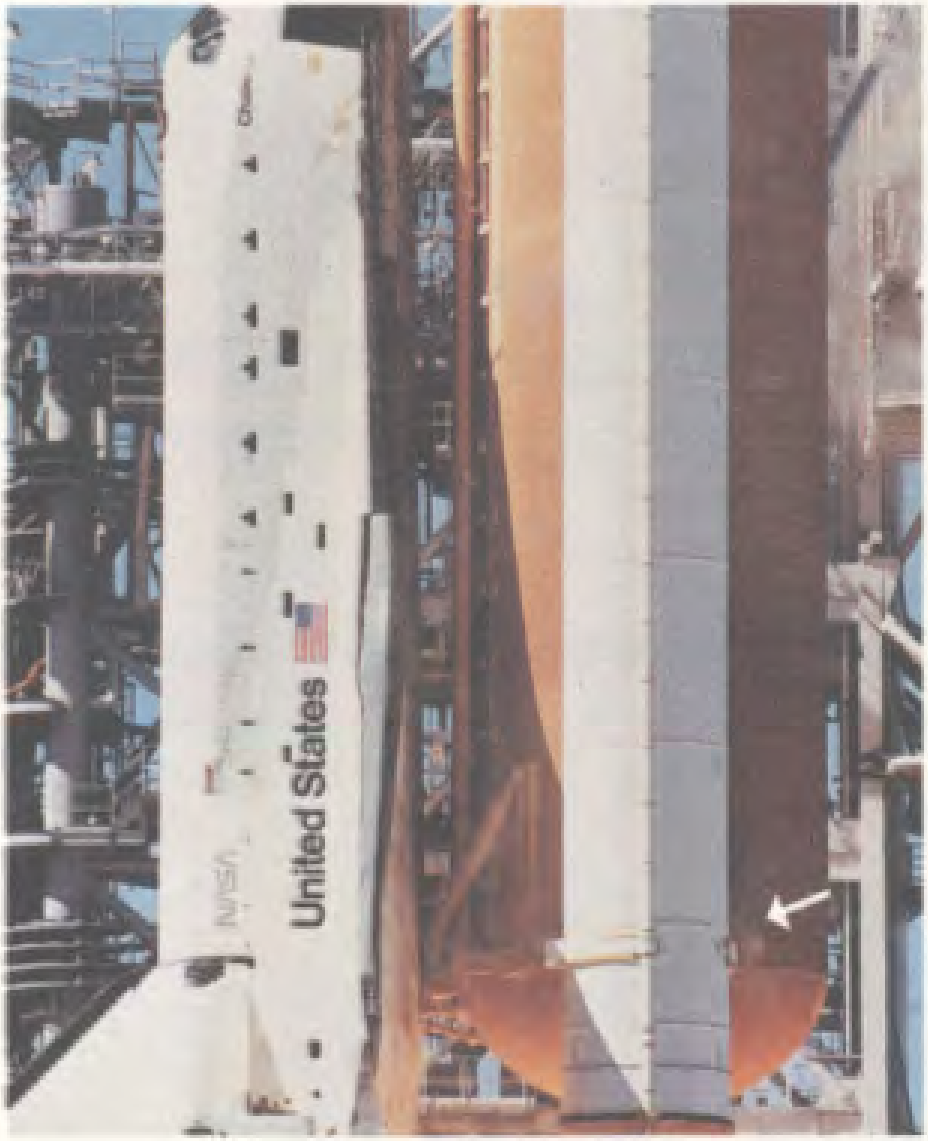
- Second shuttle built
- Designed for testing only
- Later converted for actual missions
- Nine successful launches
- First (and last) mission in Teacher In Space Program

Challenger Disaster
January 28, 1986

- Challenger broke up 73 seconds into flight.
- All seven astronauts died.
- Due to Teacher-in-Space Christa McAuliffe, most-watched launch since moon landing.
- Cold weather weakened Solid Rocket Booster o-ring joint which failed at ignition.
- Morton-Thiokol engineers opposed launch but were overruled by company management acting under pressure from NASA.
- Crew had no escape system or early warning capability.
- Investigations concluded that NASA should have grounded shuttle due to seriousness of o-ring joint problems.
- Investigations cited launch schedule pressures.

First Damage

In less than 1 second, smoke appeared at the ring joint, indicating that the rings are burnt and failed to seal.

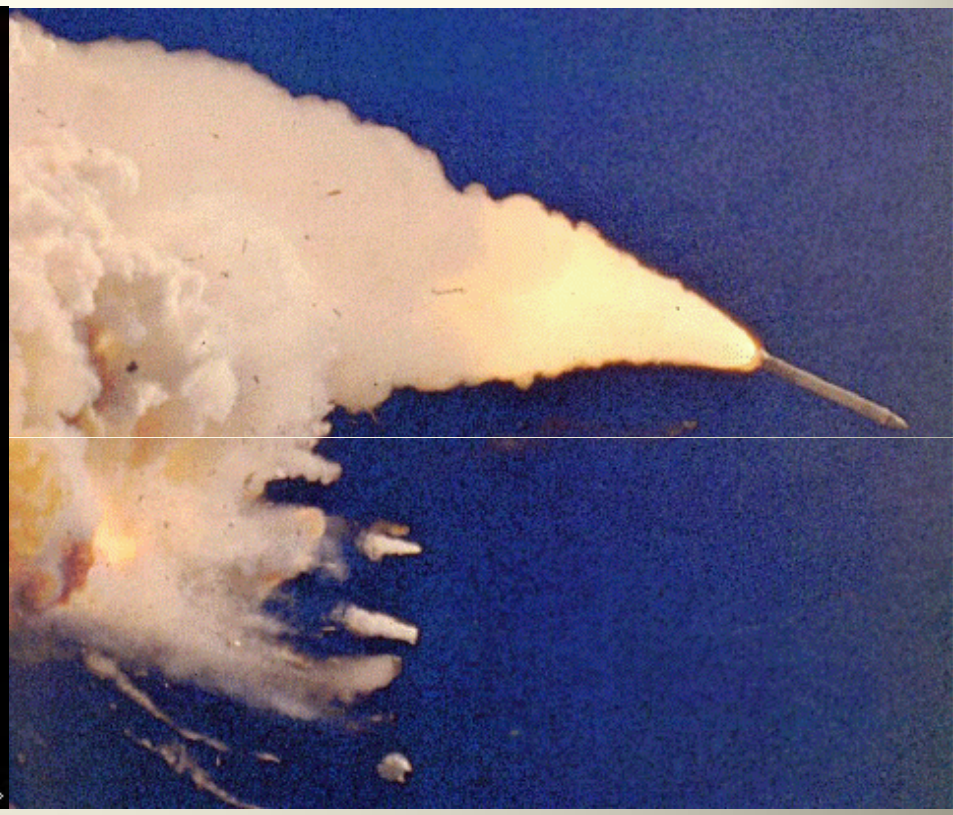


White cylinder is the Solid Rocket Booster (SRB), filled with liquid Hydrogen
The orange tank is filled with Liquid Oxygen

First Damage: After Effects

The leak lasted only about 2 seconds then the shuttle rose.
In less than a minute - when Challenger was 6 miles up – thick flames start from H tank – part of SRB.
The Flames cut into the main (orange) liquid O_2 fuel tank.

Last Damage

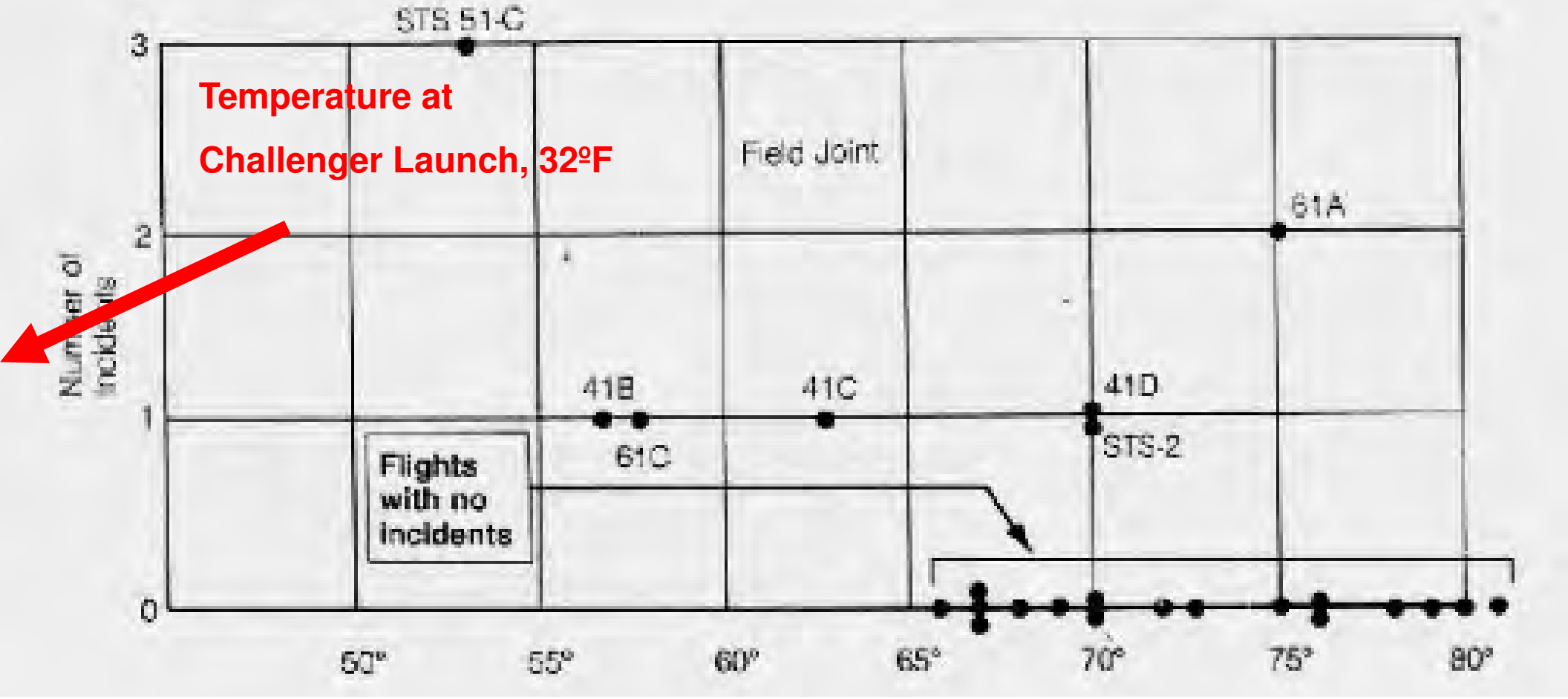


Shuttle exploded and broke up 73 sec after liftoff.
Rockets crisscrossed and continued flying wildly

The Investigation

- Thiokol Engineers had all the data they needed
- They knew O-Rings were likely to fail in cold
- Engineering management believed them and told NASA not to launch
- NASA asked for the supporting data, engineers presented the data poorly, NASA was unconvinced
- Thiokol engineers and management reversed their position and approved the launch

Chart by Rogers Commission Showing all launches



A later slide will show how this data was presented.

Night Before Launch

"too cold, delay launch!" until >53ºF (it was 29ºF on the morning of the launch)

Every single launch in cold temperatures showed damage

Pressure to launch included competition with Russia to be the first to observe Halley's comet

Result

The cold O-Rings failed, system exploded and the crew was lost.

Could this have been prevented?

Wasn't it the O-rings?

"*[The Rogers commission] found that the Challenger accident was caused by a failure in the O-rings … The failure of the O-rings was attributed to a design flaw, as their performance could be too easily compromised by factors including the low temperature on the day of launch"*

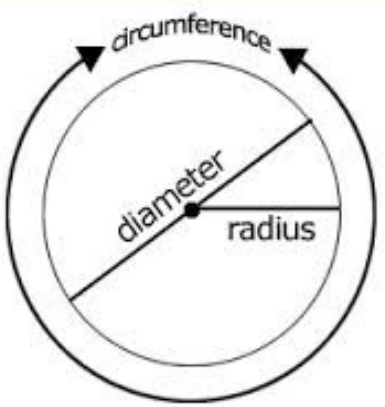
Yes... but there were underlying cause(s)

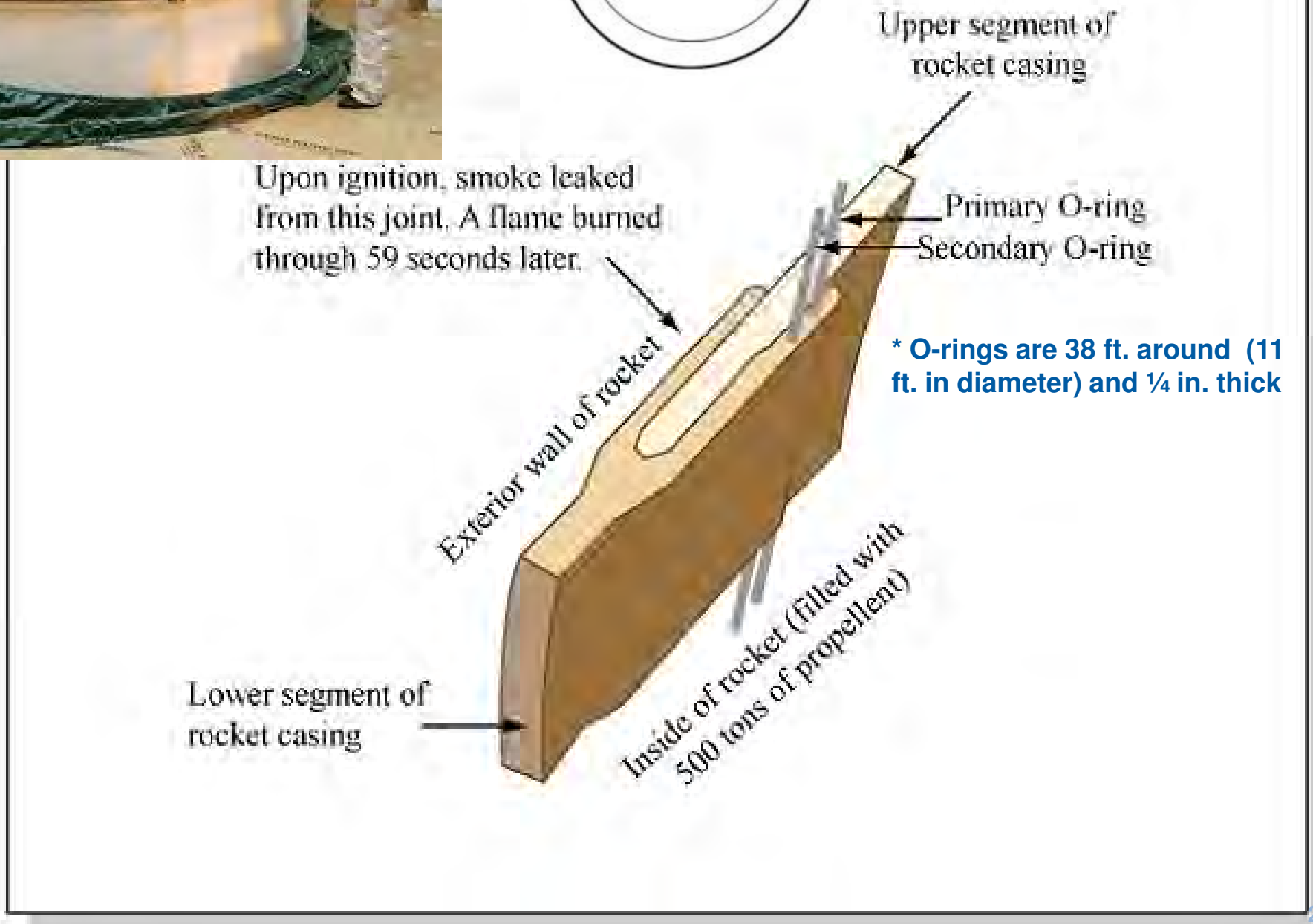
Communication Problems

"..failures in communication... resulted in a decision to launch 51-L based on incomplete and sometimes misleading information, a conflict between engineering data and management judgments, and a NASA management structure that permitted internal flight safety problems to bypass key Shuttle managers."

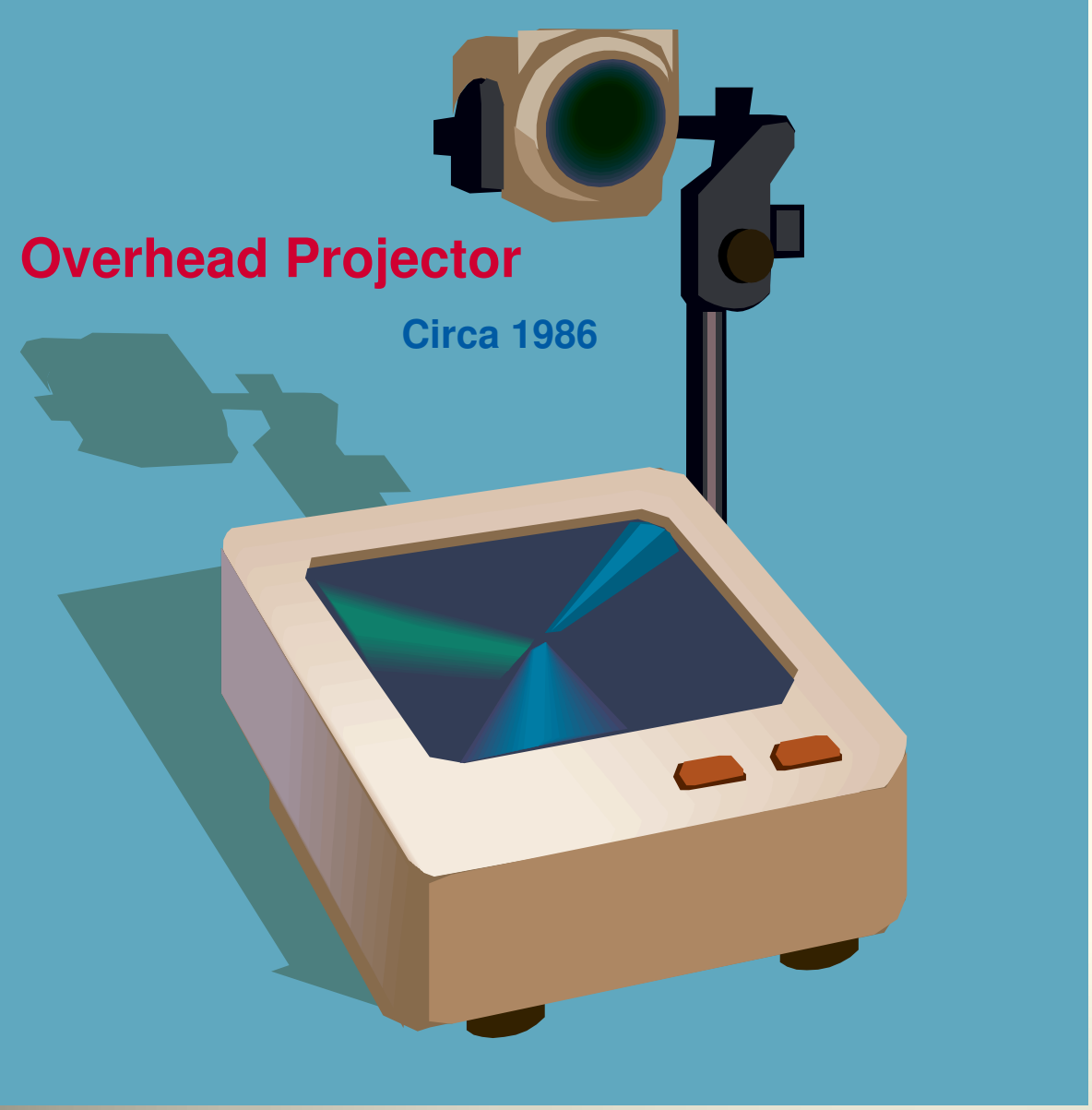
Management Errors:

"***The Commission found that as early as 1977, NASA managers had not only known about the flawed O-ring, but that it had the potential for catastrophe."***





*** O-rings are 38 ft. around (11 ft. in diameter) and ¼ in. thick**



- Thiokol's stated position was that "the condition is not desirable but is acceptable.“ *
- Accepting this critical level 1 risk became the norm
- Decision makers were unaware of recent problems with the O-rings and contractor’s recommendations

Chapter VI: *“An Accident Rooted in History”.*

* Report of the PRESIDENTIAL COMMISSION on the Space Shuttle Challenger Accident

Conclusions:

- Temperature of O-Rings is not only Parameter Controlling Blow-By

  SRM 15 with Blow-By had an O-Ring Temp at 53°F
  SRM 22 with Blow-By had An O-Ring Temp at 75°F
  Four Development Motors with No Blow-By were tested at O-Ring Temp of 47° To 52°F

  Development Motors had Putty Packing which Resulted in Better Performance

- At About 50°F Blow-By could be Experienced in Case Joints

- Temp for SRM 15 on 1-28-86 Launch Will be 29°F 7 AM
  30°F 2 PM

- Have No Data That would Indicate SRM 25 is Different than SRM 15 other than Temp

Blow By History

SRM-15 Worst Blow-By

- 2 Case Joints (90°), (110°) Arc
- Much Worse Visually than SRM-22

SRM 22 Blow-By

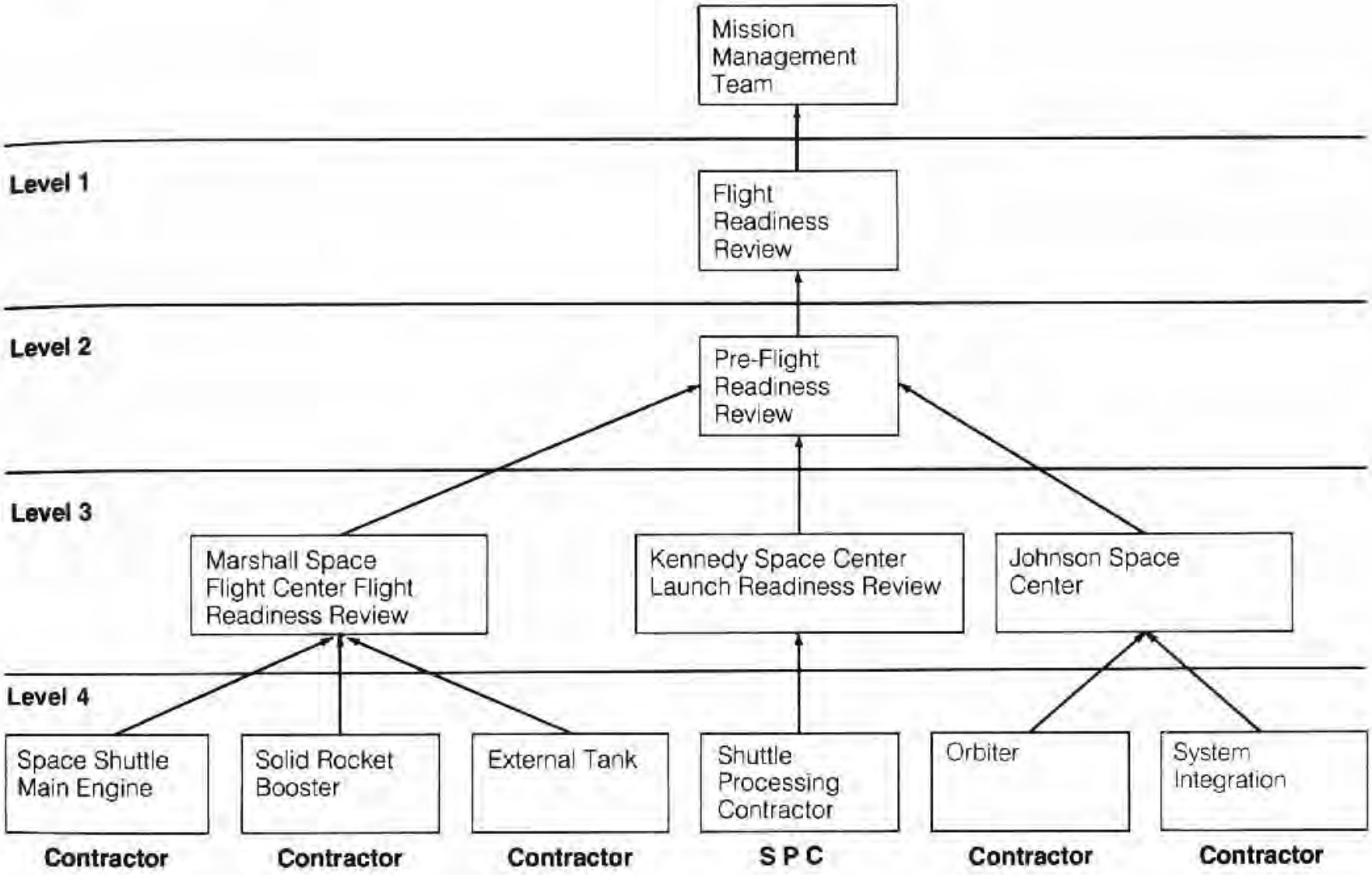
- 2 Case Joints (30-40°)

SRM-12A, 15, 16A, 18, 23A 24A

- Nozzle Blow-By

These were some of the slides that Morton Thiokol used to present the danger to NASA management

Readiness Reviews



Readiness reviews for both the launch and the flight of a Shuttle mission are conducted at ascending levels that begin with contractors.

NOTE: See Chart on page 102 for description of management "levels" and organization chain of command.

Roger's Commission Report Findings*

Mr. Mulloy testified as follows regarding the Flight Readiness Review record about O-ring concerns: [5]

Chairman Rogers: . . . Why wasn't that a cause for concern on the part of the whole NASA organization?
Mr. Mulloy: It was cause for concern, sir.
Chairman Rogers: Who did you tell about this?
Mr. Mulloy: Everyone, sir.
Chairman Rogers: And they all knew about it at the time of 51-L?
Mr. Mulloy: Yes, sir. You will find in the Flight Readiness Review record that went all the way to the L-1 review.

Contrary to the testimony of the Solid Rocket Booster Project Manager, the seriousness of concern was not conveyed in Flight Readiness Review to Level I and the 51-L readiness review was silent.

Chapter VI: *"An Accident Rooted in History".*

*** Report of the PRESIDENTIAL COMMISSION on the Space Shuttle Challenger Accident**

Roger's Commission Report Findings*

- The decision to launch the Challenger was flawed
- Testimony reveals failures in communication that resulted in a decision to launch based on incomplete and misleading information, a conflict between engineering data and management judgments, and a NASA management structure that permitted internal flight safety problems to bypass key Shuttle managers.
- Had decision makers known all of the facts, it is highly unlikely that they would have decided to launch 51-L on January 28, 1986

Chapter V: *"The Contributing Cause of The Accident".*

* Report of the PRESIDENTIAL COMMISSION on the Space Shuttle Challenger Accident

Roger's Commission Report Findings*

- The O-ring was identified as a critical issue as early as 1982
- In all cases where temperatures were below the threshold recommended by Morton Thiokol (5 launches) there were no O-ring failures
- Thiokol engineers had to 'prove' that it was unsafe to launch – rather than the opposite which is the norm
- Initial Thiokol analysis concluded Challenger should not fly
- NASA managers were not convinced there was enough evidence to support canceling the mission

Chapter V: *"The Contributing Cause of The Accident".*

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Better Communication could have prevented

Death of our Astronauts.
"Challenger disintegrated about seventy-three seconds after launch, killing the seven astronauts aboard"

Badly damaged reputation for NASA:
"*It also represented a serious blow to NASA's reputation, colouring the public perception of piloted spaceflight ..*"

Financial losses and reduced funding opportunity
"…and *affecting the agency's ability to gain continued funding from Congress.*"

Inability to meet operational commitments
"Following the Challenger disaster, NASA grounded the remainder of the shuttle fleet while the risks were assessed more thoroughly, design flaws were identified, and modifications were developed and implemented."

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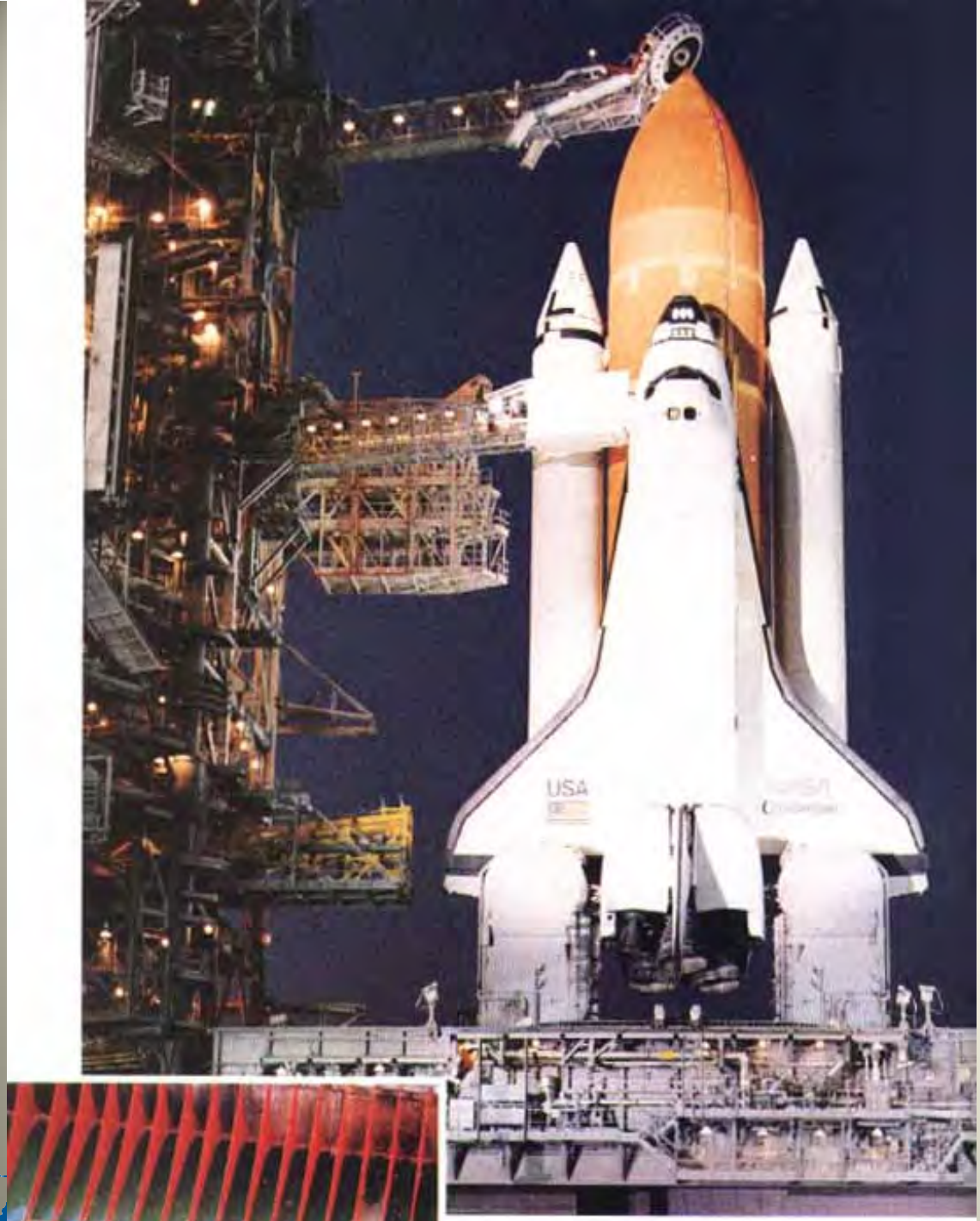
Above, foot long icicles on a lower level of the Fixed Service Structure frame the attachment point where the Orbiter is attached to the external tank (arrow). Icing was even more extensive at upper levels of the service structure (upper right and below). At right below is a ground communications box (not used during launch) rendered inoperable by heavy ice.

Left [upper left], foot long icicles on a lower level of the Fixed Service Structure frame the attachment point where the Orbiter is attached to the external tank (arrow). Icing was even more extensive at upper levels of the service structure [(upper right, lower left)]. At right below is a ground communications box (not used during launch) rendered inoperable by heavy ice.

If you had seen this would you have been able to tell there was a problem?



Left, Shuttle 51-L on Kennedy Space Center Pad 39B in the early morning of launch day 28 January 1985. Temperatures were well below freezing, as indicated by the lower left photo, which shows thick ice in a water trough despite the use of an anti-freeze solution.

Back Up Slides

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