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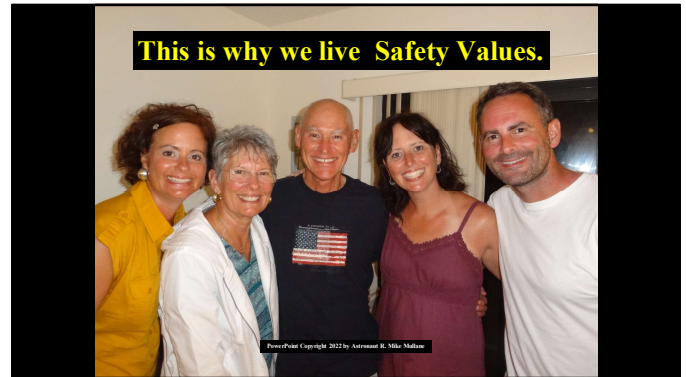
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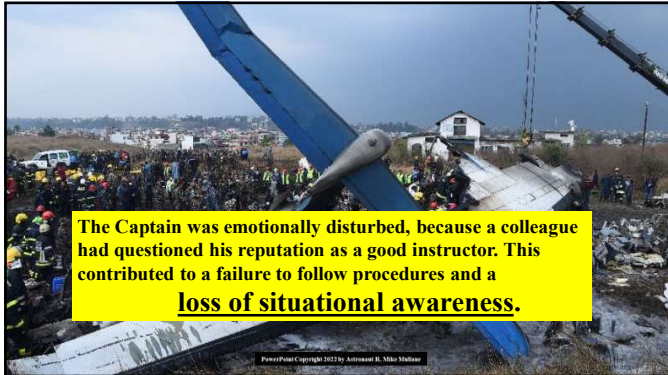
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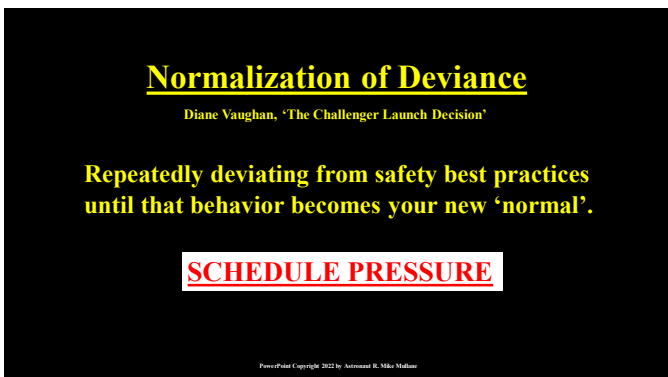
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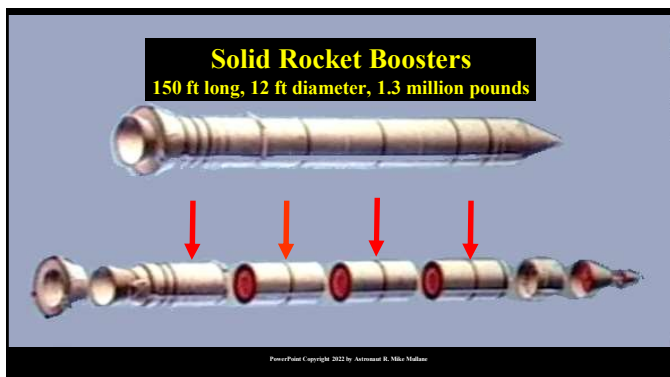
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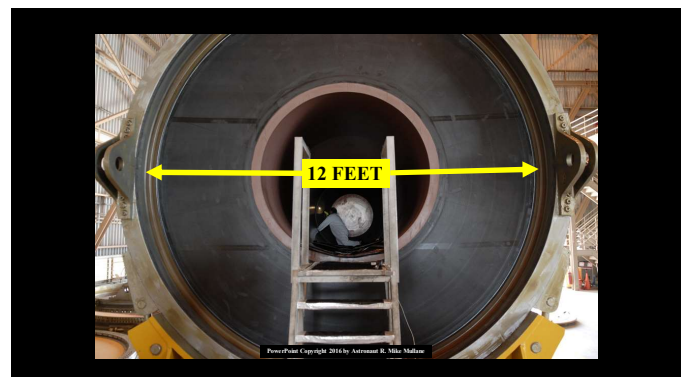
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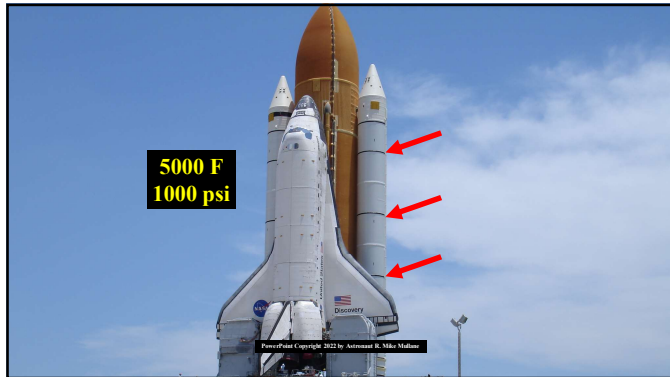
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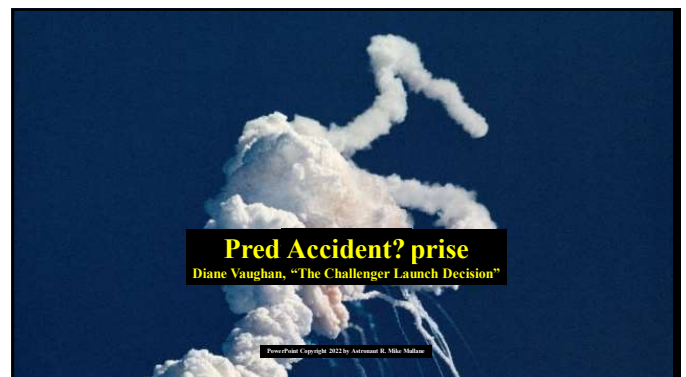
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Thiokol memo dated July 31, 1985
(6 months prior to Challenger)

“It is my honest and very real fear that if we do not take immediate action to dedicate a team to solve the problem with the field joint (the O-ring problem)...we stand in jeopardy of losing a flight, (a crew) and all the launch pad facilities.”

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Predictable Surprise

Diane Vaughan, "The Challenger Launch Decision"

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Risk Analysis Document

SRB CRITICAL ITEMS LIST

Criticality Category: 1

What will happen if this component fails?
...single failure point...

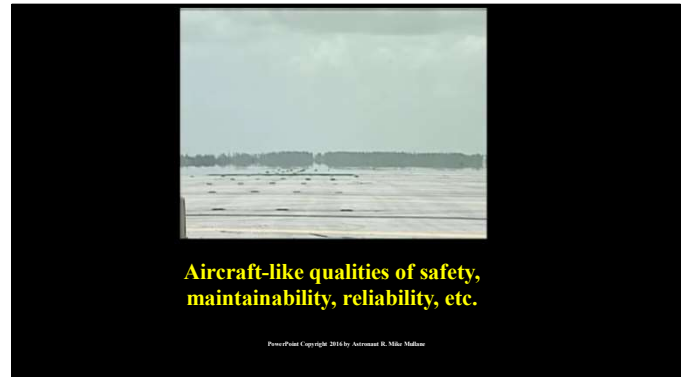
Loss of mission, vehicle and crew...

Case, P/N 100019, 100021, 100030, 100038, 100045, 100050, 100055, 100060, 100065, 100070, 100075, 100080, 100085, 100090, 100095, 100100, 100105, 100110, 100115, 100120, 100125, 100130, 100135, 100140, 100145, 100150, 100155, 100160, 100165, 100170, 100175, 100180, 100185, 100190, 100195, 100200, 100205, 100210, 100215, 100220, 100225, 100230, 100235, 100240, 100245, 100250, 100255, 100260, 100265, 100270, 100275, 100280, 100285, 100290, 100295, 100300, 100305, 100310, 100315, 100320, 100325, 100330, 100335, 100340, 100345, 100350, 100355, 100360, 100365, 100370, 100375, 100380, 100385, 100390, 100395, 100400, 100405, 100410, 100415, 100420, 100425, 100430, 100435, 100440, 100445, 100450, 100455, 100460, 100465, 100470, 100475, 100480, 100485, 100490, 100495, 100500, 100505, 100510, 100515, 100520, 100525, 100530, 100535, 100540, 100545, 100550, 100555, 100560, 100565, 100570, 100575, 100580, 100585, 100590, 100595, 100600, 100605, 100610, 100615, 100620, 100625, 100630, 100635, 100640, 100645, 100650, 100655, 100660, 100665, 100670, 100675, 100680, 100685, 100690, 100695, 100700, 100705, 100710, 100715, 100720, 100725, 100730, 100735, 100740, 100745, 100750, 100755, 100760, 100765, 100770, 100775, 100780, 100785, 100790, 100795, 100800, 100805, 100810, 100815, 100820, 100825, 100830, 100835, 100840, 100845, 100850, 100855, 100860, 100865, 100870, 100875, 100880, 100885, 100890, 100895, 100900, 100905, 100910, 100915, 100920, 100925, 100930, 100935, 100940, 100945, 100950, 100955, 100960, 100965, 100970, 100975, 100980, 100985, 100990, 100995, 101000, 101005, 101010, 101015, 101020, 101025, 101030, 101035, 101040, 101045, 101050, 101055, 101060, 101065, 101070, 101075, 101080, 101085, 101090, 101095, 101100, 101105, 101110, 101115, 101120, 101125, 101130, 101135, 101140, 101145, 101150, 101155, 101160, 101165, 101170, 101175, 101180, 101185, 101190, 101195, 101200, 101205, 101210, 101215, 101220, 101225, 101230, 101235, 101240, 101245, 101250, 101255, 101260, 101265, 101270, 101275, 101280, 101285, 101290, 101295, 101300, 101305, 101310, 101315, 101320, 101325, 101330, 101335, 101340, 101345, 101350, 101355, 101360, 101365, 101370, 101375, 101380, 101385, 101390, 101395, 101400, 101405, 101410, 101415, 101420, 101425, 101430, 101435, 101440, 101445, 101450, 101455, 101460, 101465, 101470, 101475, 101480, 101485, 101490, 101495, 101500, 101505, 101510, 101515, 101520, 101525, 101530, 101535, 101540, 101545, 101550, 101555, 101560, 101565, 101570, 101575, 101580, 101585, 101590, 101595, 101600, 101605, 101610, 101615, 101620, 101625, 101630, 101635, 101640, 101645, 101650, 101655, 101660, 101665, 101670, 101675, 101680, 101685, 101690, 101695, 101700, 101705, 101710, 101715, 101720, 101725, 101730, 101735, 101740, 101745, 101750, 101755, 101760, 101765, 101770, 101775, 101780, 101785, 101790, 101795, 101800, 101805, 101810, 101815, 101820, 101825, 101830, 101835, 101840, 101845, 101850, 101855, 101860, 101865, 101870, 101875, 101880, 101885, 101890, 101895, 101900, 101905, 101910, 101915, 101920, 101925, 101930, 101935, 101940, 101945, 101950, 101955, 101960, 101965, 101970, 101975, 101980, 101985, 101990, 101995, 102000, 102005, 102010, 102015, 102020, 102025, 102030, 102035, 102040, 102045, 102050, 102055, 102060, 102065, 102070, 102075, 102080, 102085, 102090, 102095, 102100, 102105, 102110, 102115, 102120, 102125, 102130, 102135, 102140, 102145, 102150, 102155, 102160, 102165, 102170, 102175, 102180, 102185, 102190, 102195, 102200, 102205, 102210, 102215, 102220, 102225, 102230, 102235, 102240, 102245, 102250, 102255, 102260, 102265, 102270, 102275, 102280, 102285, 102290, 102295, 102300, 102305, 102310, 102315, 102320, 102325, 102330, 102335, 102340, 102345, 102350, 102355, 102360, 102365, 102370, 102375, 102380, 102385, 102390, 102395, 102400, 102405, 102410, 102415, 102420, 102425, 102430,

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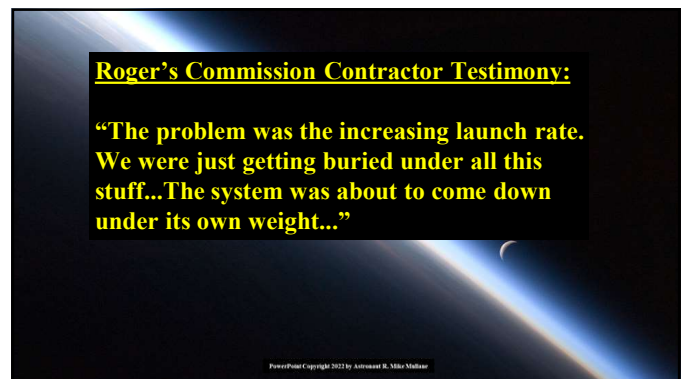
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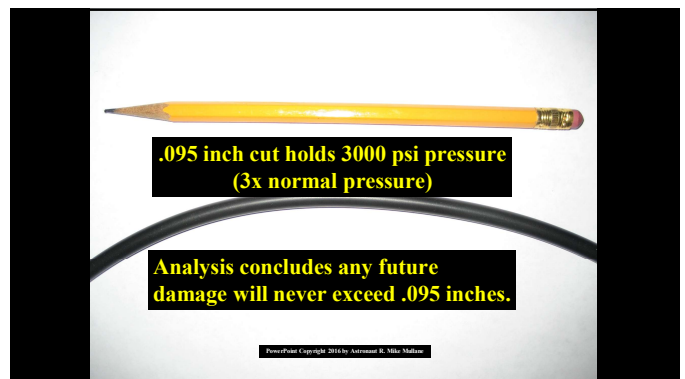
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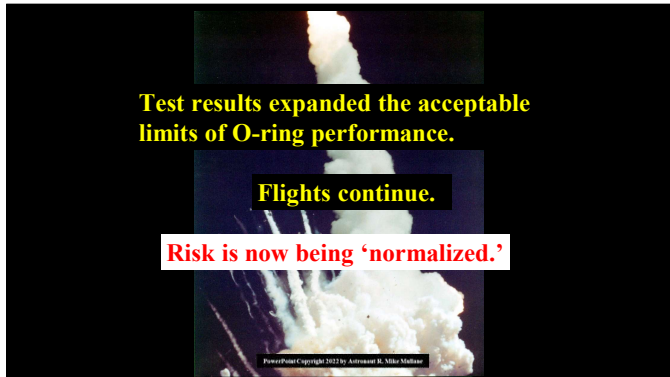
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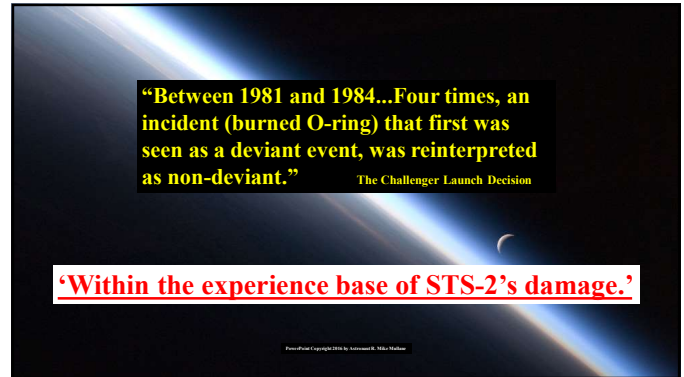
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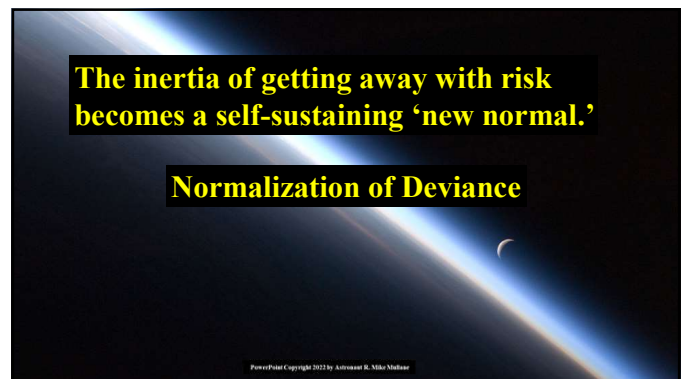
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LESSON 1:

A world class safety legacy does not imply you are safe in the moment.

13 Years



Complacency



Driving with your eyes fixed on the rearview mirror.

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LESSON 2:

Risk has no memory.

Risk is not diminished as a function of your success in repeatedly taking a risk.

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Progression of Risk Justification

We have to take this safety shortcut because (fill in the blank).

But it is a risk.

So, we need to keep a close eye on this.

It's okay. We've seen this before.

A risk successfully taken is a risk reduced.

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The laws of physics have no memory.

The laws of firefighting have no memory.

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LESSON 3:

There is never a 'one-and-done' when it comes to deviance from safety best practices.

Because the first successful deviance removes the ceiling for risk.

Safety Best Practices



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LESSON 4:

Report near misses...in all their brutal ugliness.

STS-2 was a near miss. STS-25 was a disaster.

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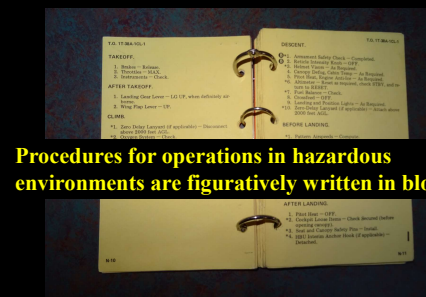
LESSON 5:

Procedural compliance should be a religion.



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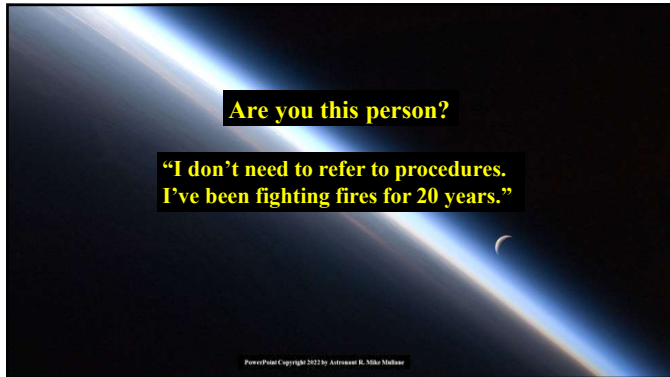
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Procedures for operations in hazardous environments are figuratively written in blood.

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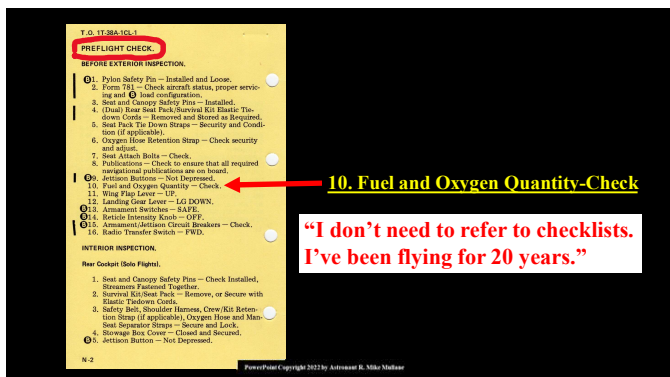
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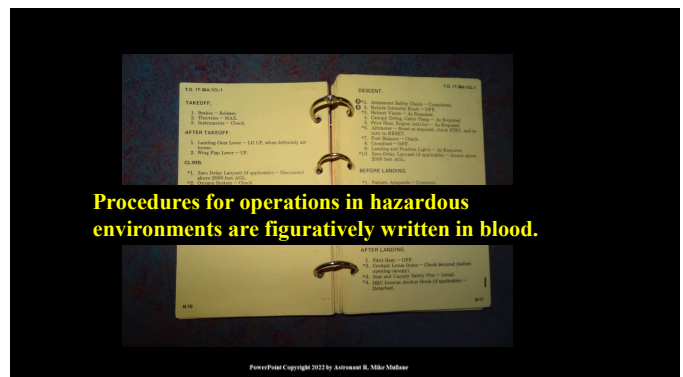
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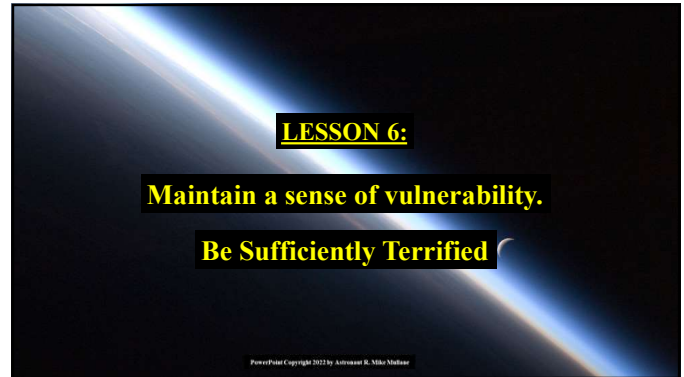
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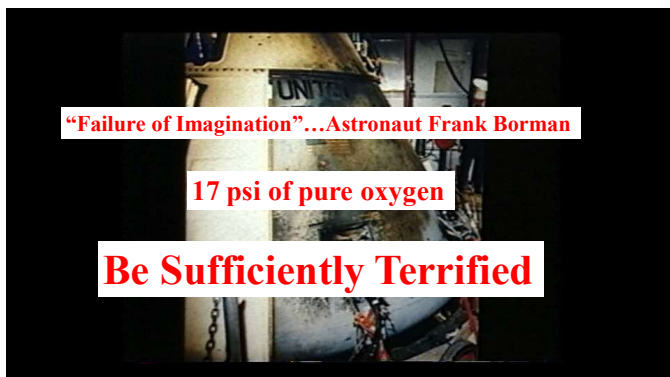
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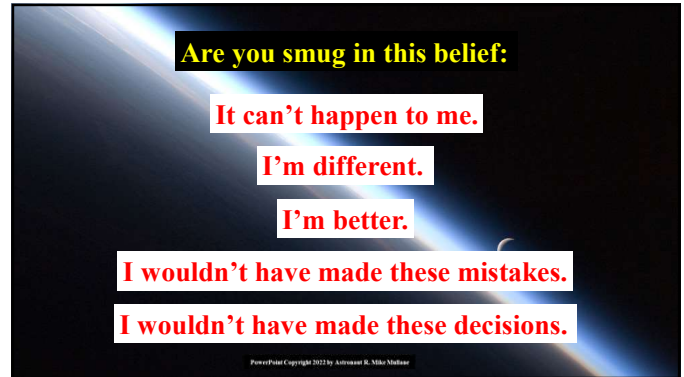
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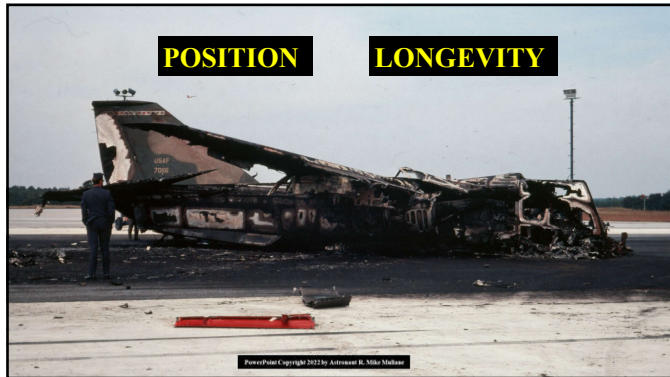
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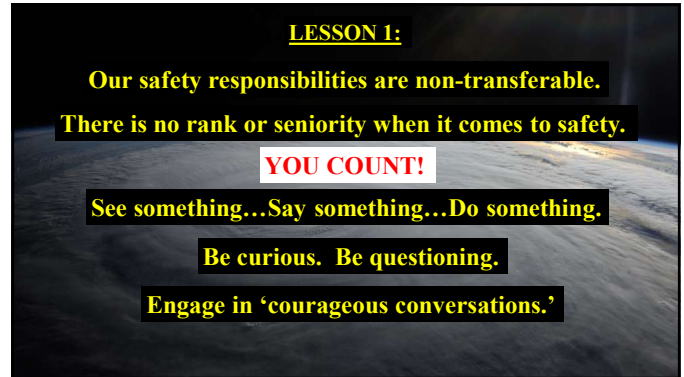
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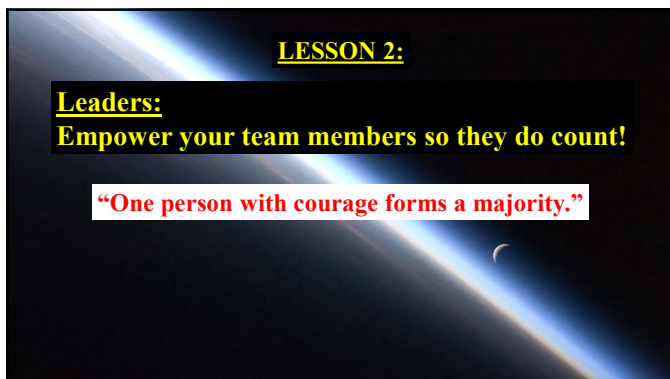
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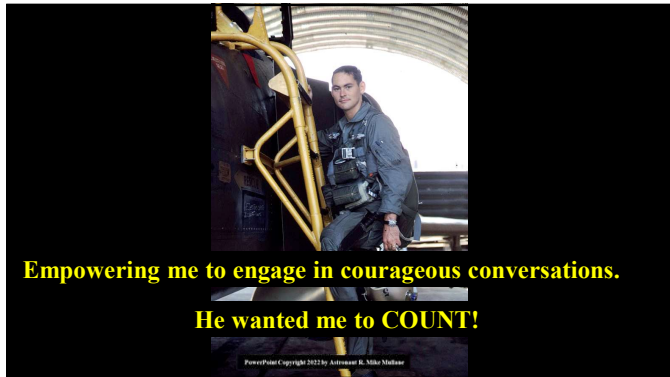
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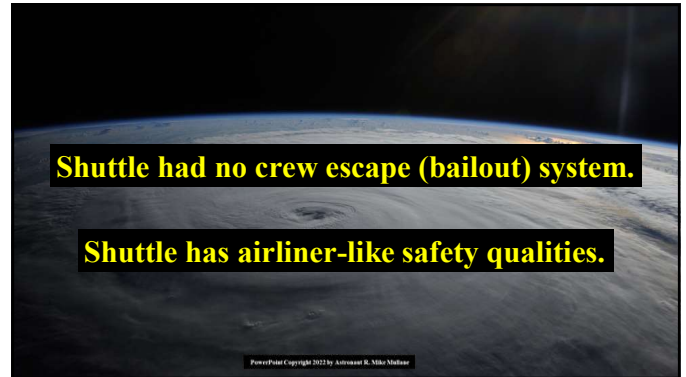
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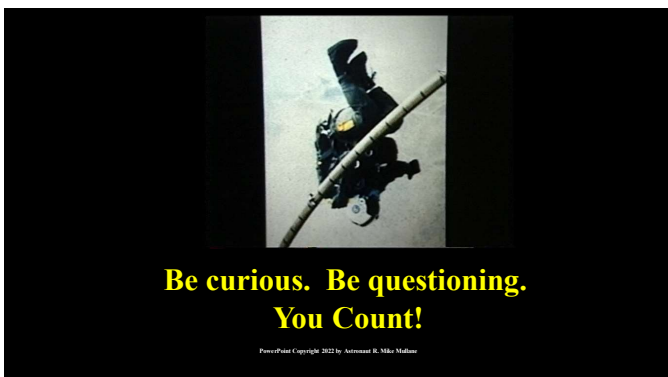
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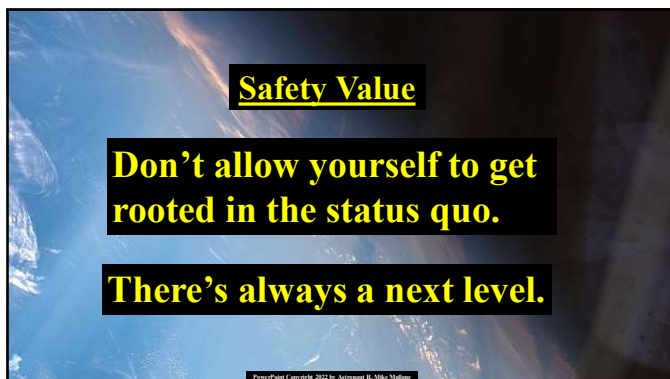
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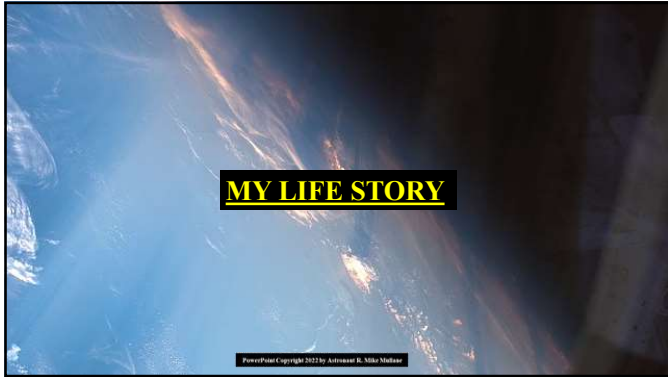
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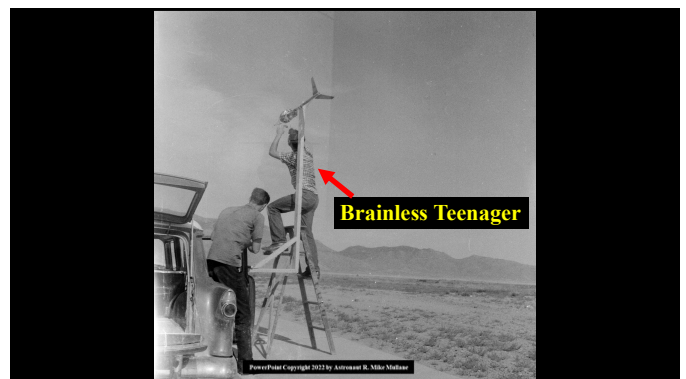
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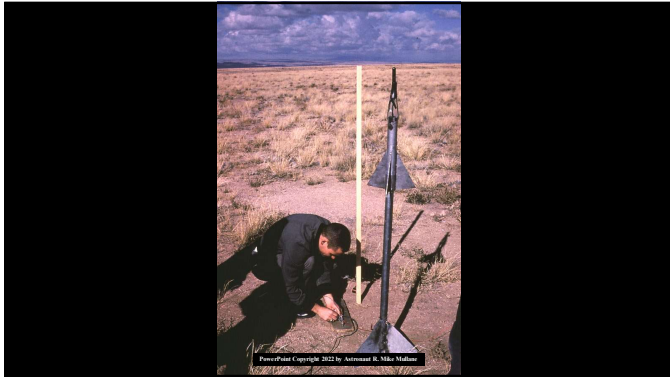
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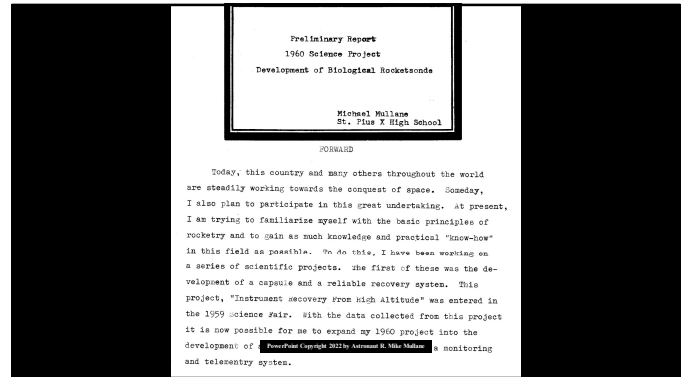
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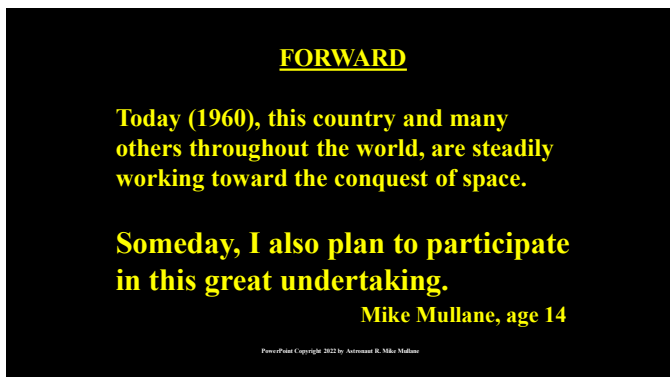
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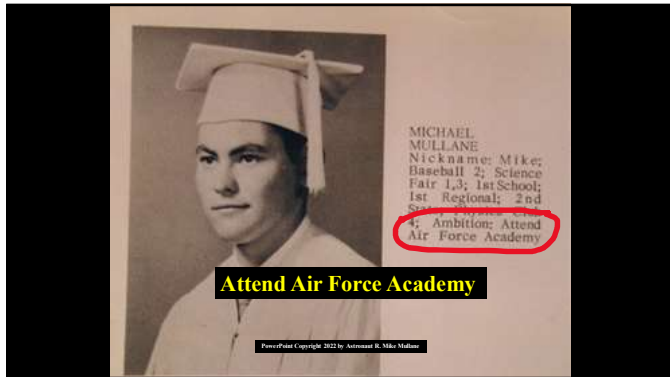
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REPORT OF UNITED STATES MILITARY ACADEMY ENTRANCE EXAMINATION

FROM: The Adjutant General
Department of the Army
Washington 25, D. C.
Attn: Military Academy Section (AGFB-M)

DATE: 22 APRIL 1963

TO: MR. RICHARD H. MULLANE
1802 LA SALA GRANDE NE
ALBUQUERQUE, N. M.

SOURCE OF TEST OR INFORMATION: **THIRD ALTERNATE**
REF: HUNT-074

RESULTS OF EXAMINATION WITH RESPECT TO QUALIFICATION

ACADEMIC: QUALIFIED

MEDICAL: QUALIFIED

YOUR STATUS WITH RESPECT TO ADMISSION TO THE UNITED STATES MILITARY ACADEMY IS SHOWN BELOW

THIRD ALTERNATE

1. DISQUALIFIED FOR ADMISSION, as shown above. (See Note 1 on Reverse Side)

2. QUALIFIED - NO VIOLATION: You are fully qualified but there is no vacancy for your admission under the terms of your nomination. If you can arrange for no more, YOU WILL BE ADMITTED PROMPTLY.

3. QUALIFIED - STATUS PENDING: You are fully qualified for your right to admission under the terms of your nomination. However, the status of the presently unfilled position of the candidate, or candidate, listed as you. YOU WILL BE ADMITTED AS SOON AS POSSIBLE. RETURN TO US.

4. MEDICAL EXAMINATION AUTHORITY: Read Note 2 on Reverse Side. Should you desire a medical representation you are authorized to request to early in possible, AND NOT LATER THAN:

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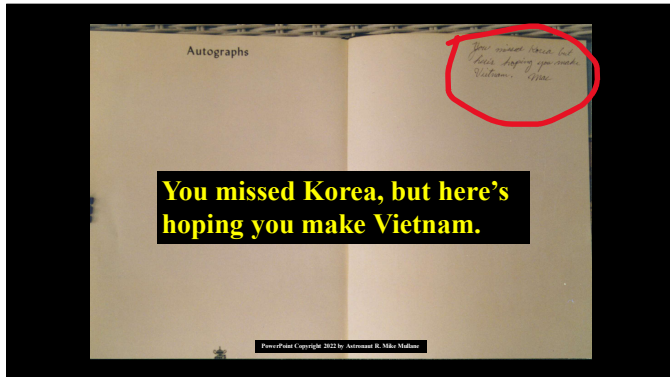
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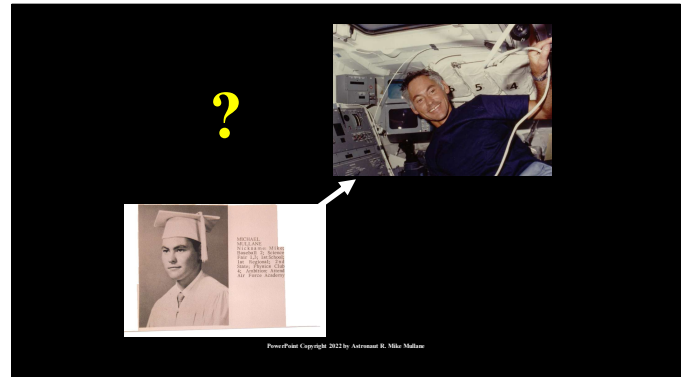
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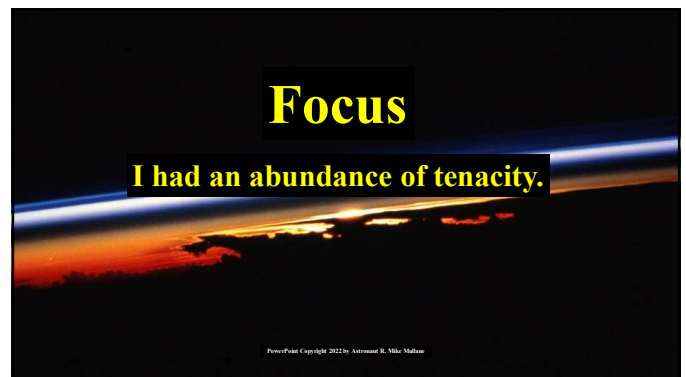
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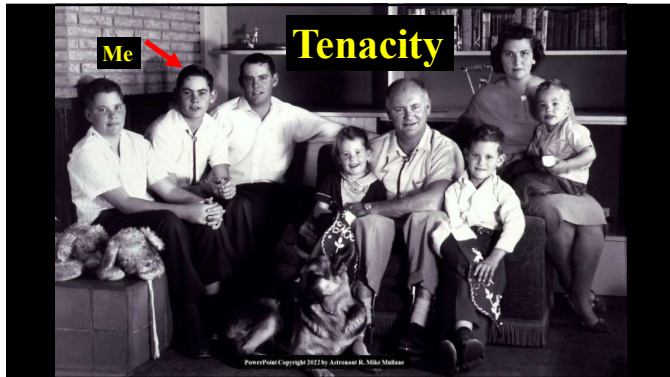
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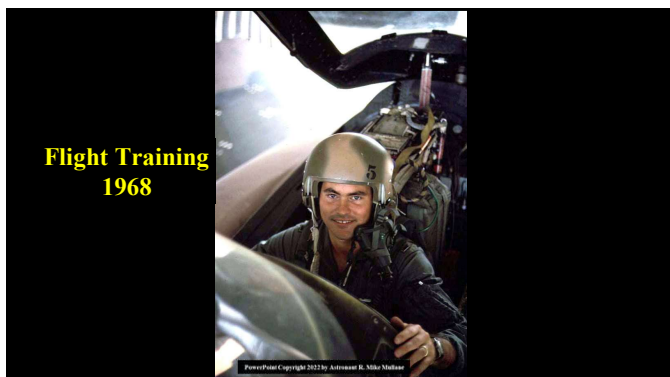
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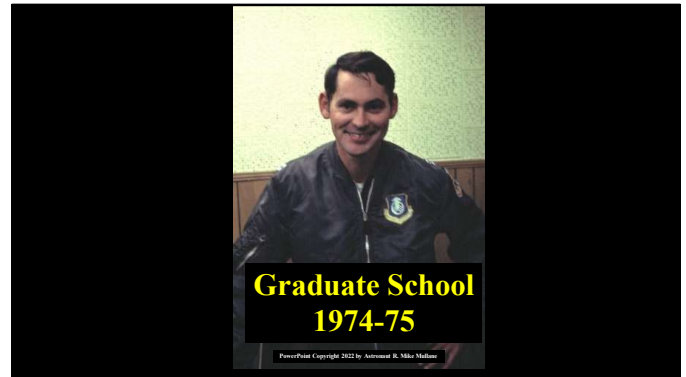
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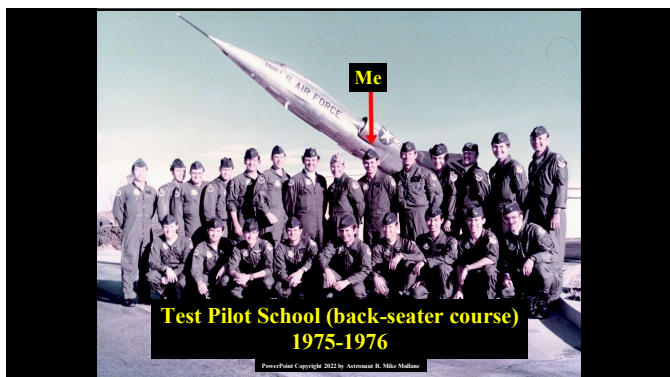
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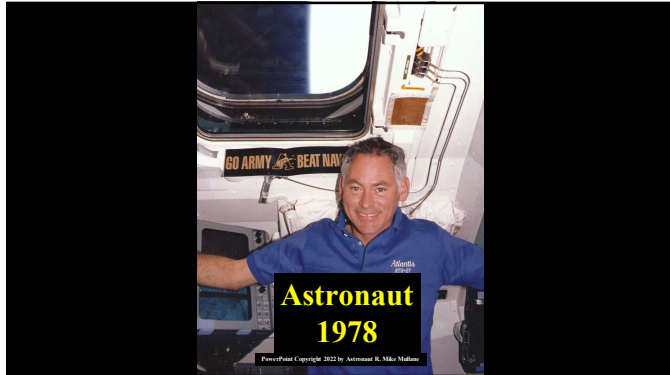
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