



**IX ALACPA Seminar on Airfield Pavements/VII FAA Workshop/II
Short Course on Airfield Pavement Maintenance**

Short Course on Airfield Pavement Maintenance

Overview on Runway Skid Resistance

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Overview on Runway Skid Resistance

Introduction

Importance of the subject

Aircraft/pavement/interface trinomial

Aircraft/pavement/interaction

What do we expect from this course?

Summary



Overview on Runway Skid Resistance

Introduction

- ✓ Runway surface drainage
- ✓ Aquaplaning
- ✓ Macrotexture
- ✓ Microtexture
- ✓ Aircraft
- ✓ Pavement
- ✓ Interaction
- ✓ Friction coefficient
- ✓ Climatic Conditions



Overview on Runway Skid Resistance

Introduction

- ✓ **Water**
- ✓ **Water film**
- ✓ **Grooving**
- ✓ **Porous friction course (PFC)**
- ✓ **CFME**
- ✓ **Tires**
- ✓ **Surface**
- ✓ **Roughness**
- ✓ **Pilot**



Overview on Runway Skid Resistance

Introduction

Runway surface drainage

Macrotexture

Microtexture

Friction coefficient

Climatic conditions

Aquaplaning

Aircraft

Pavement

Interaction



Overview on Runway Skid Resistance

Importance of the subject



Overview on Runway Skid Resistance

Importance of the subject

Aquaplaning



30/04/2000 Entebbe, Lago Victoria, Uganda



Overview on Runway Skid Resistance

Importance of the subject



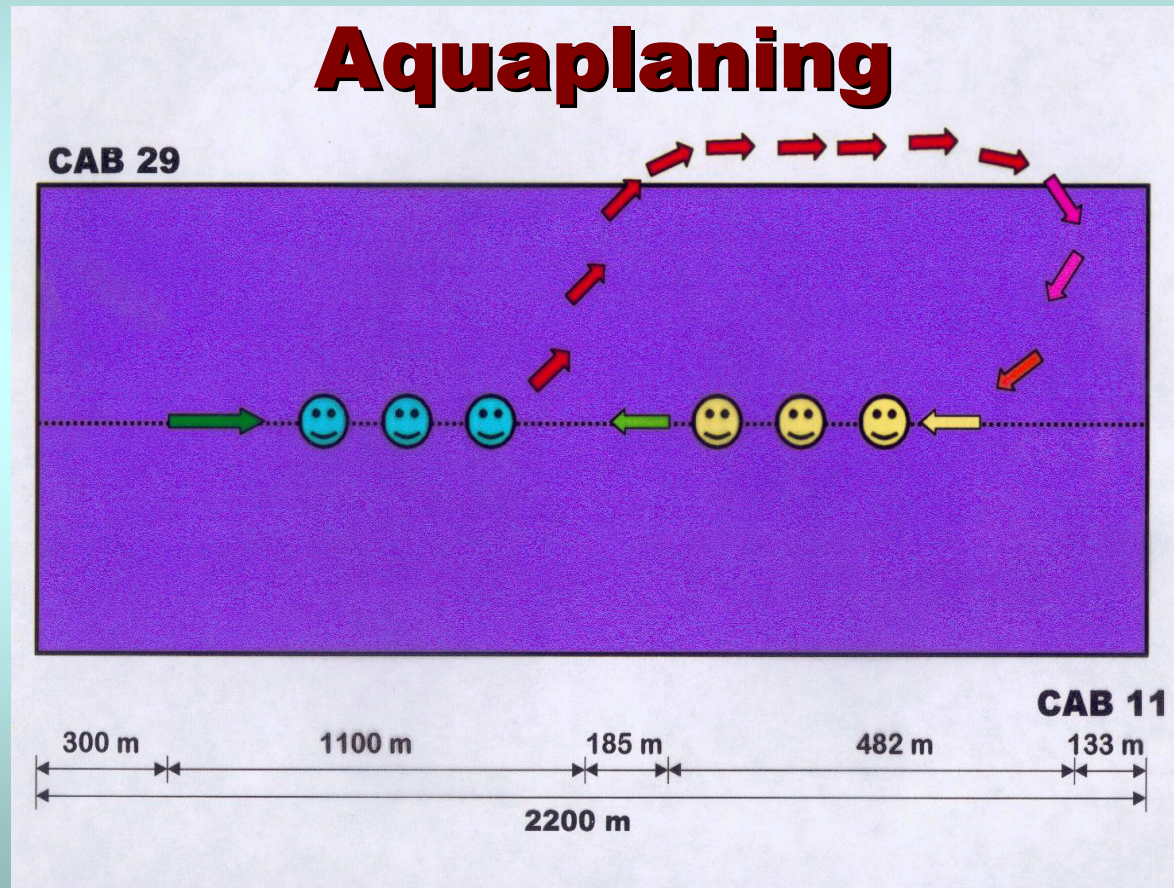
Overview on Runway Skid Resistance

Importance of the subject



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Aquaplaning



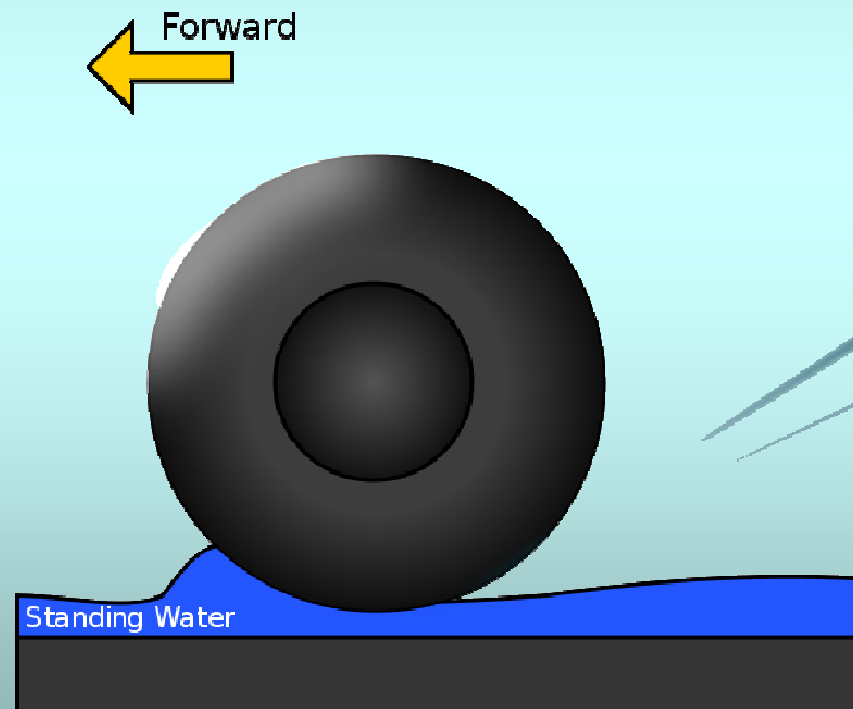
When the aircraft tires loose their contact with pavement surface (finite thickness of water film)



Overview on Runway Skid Resistance

Importance of the subject

Aquaplaning



Overview on Runway Skid Resistance

Importance of the subject

Types of aquaplaning



Dynamic aquaplaning (high speed)

Viscous aquaplaning (low speed)

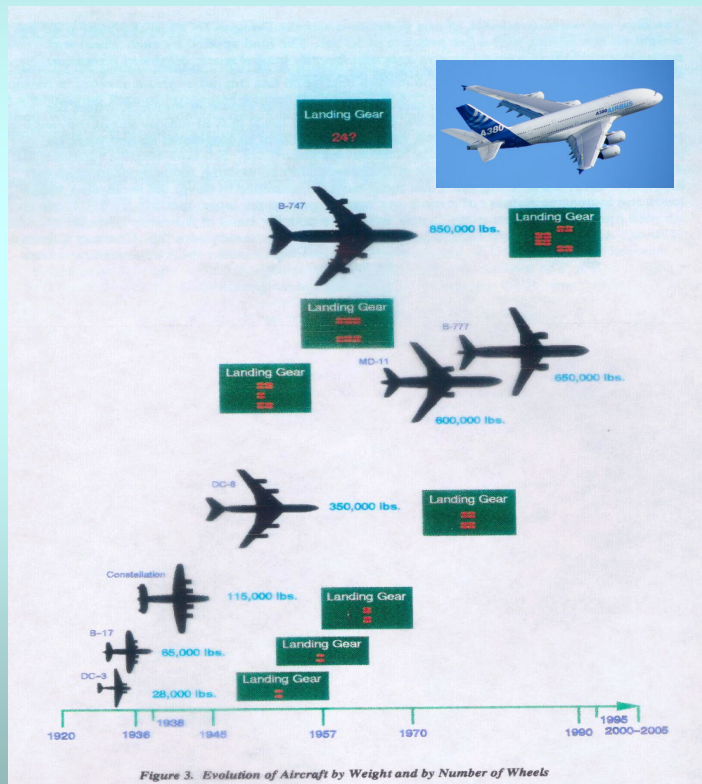
Reverted rubber aquaplaning



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Aircraft



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

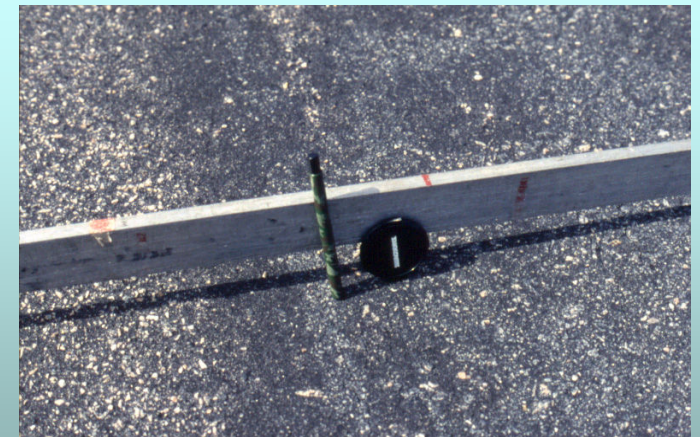
Pavement



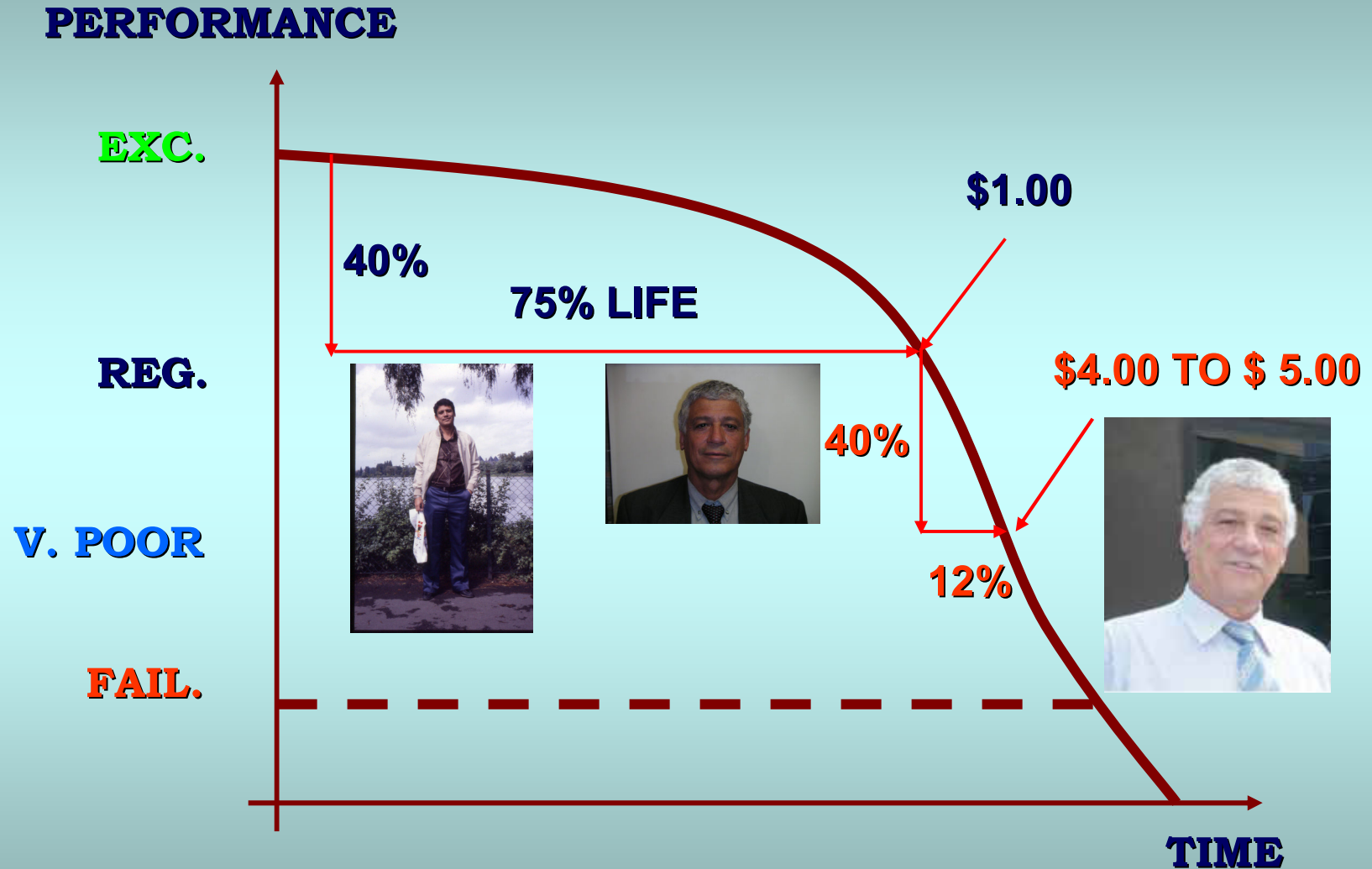
Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Pavement



Overview on Runway Skid Resistance



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Pavement



Overview on Runway Skid Resistance

Aircraft/pavement/interface trinomial



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Pavement



Surface



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Pavement

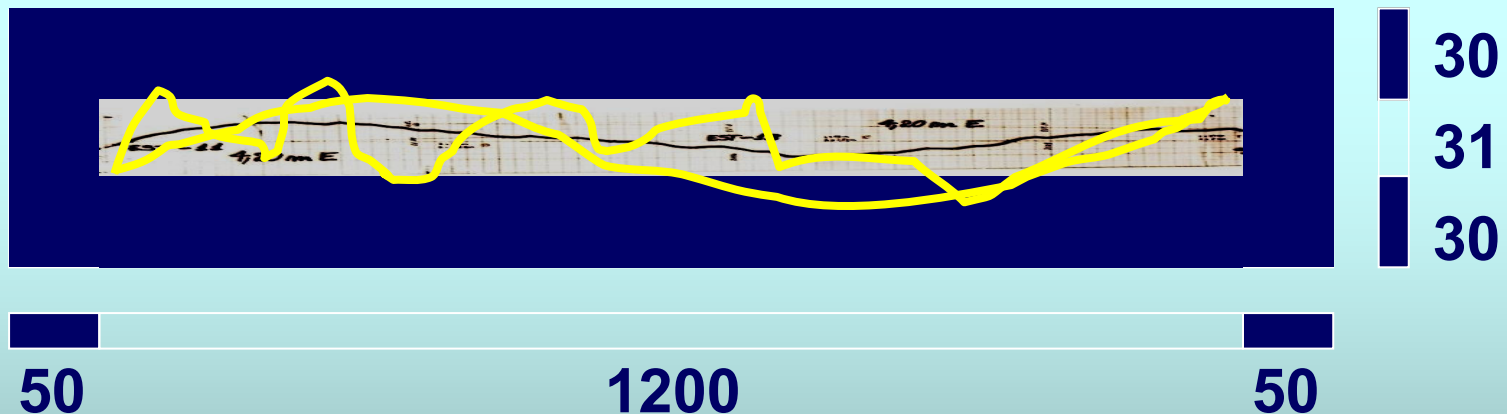


Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Pavement (Roughness)

Template (mm) for any type of aircraft



rms Criterion for any type of aircraft



Overview on Runway Skid Resistance



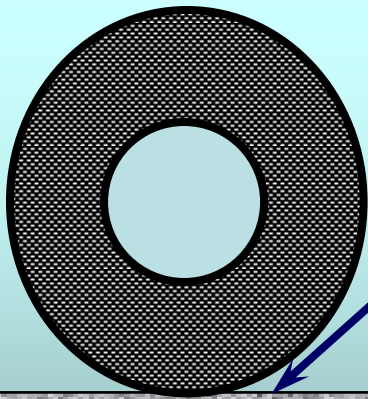
Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**

Interface

Runways do not have a friction coefficient

Friction coefficient is always a property of a pair of surfaces

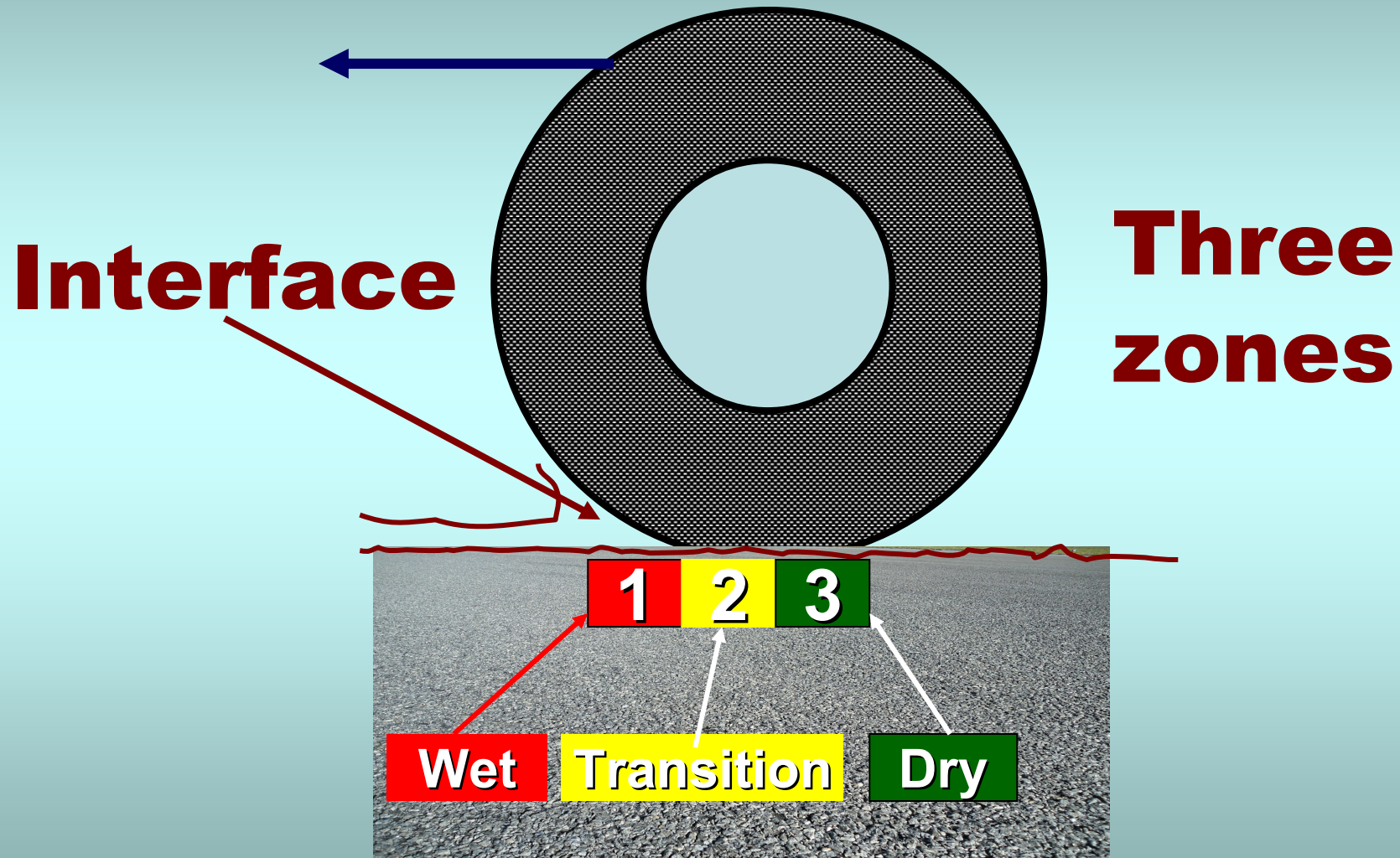


Changes at this interface can alter the frictional force (tire/surface interface)



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial**



Overview on Runway Skid Resistance

Aircraft/pavement/interface **trinomial** **Interface**

Zone 1

→ **Wet zone**

Zone 2

Water film is “squeezed”;

Very high localized pressures (microtexture);

Water pressure “breaks” water film;

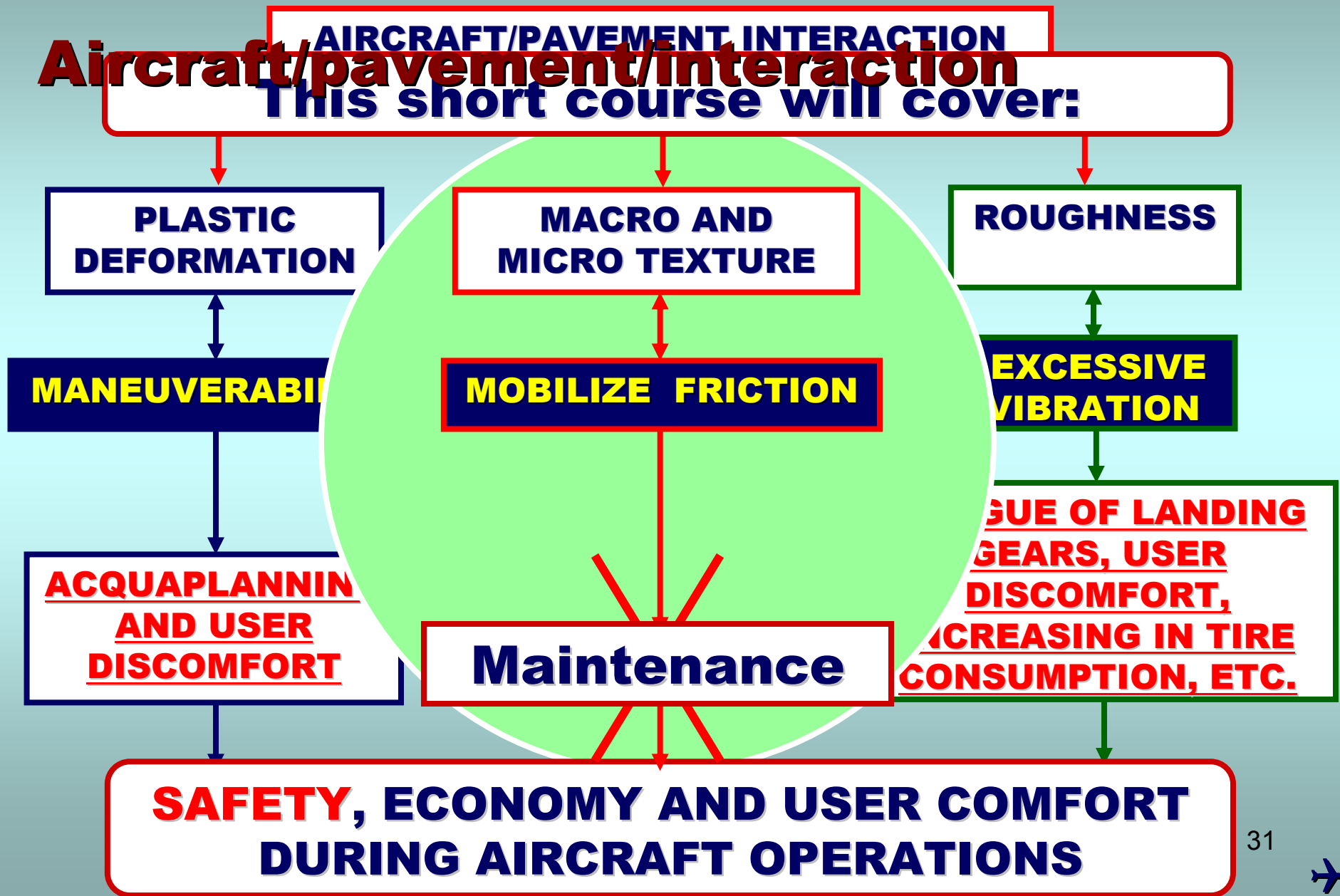
Friction is mobilized

Zone 3

→ **Without water (“perfect dry”)**

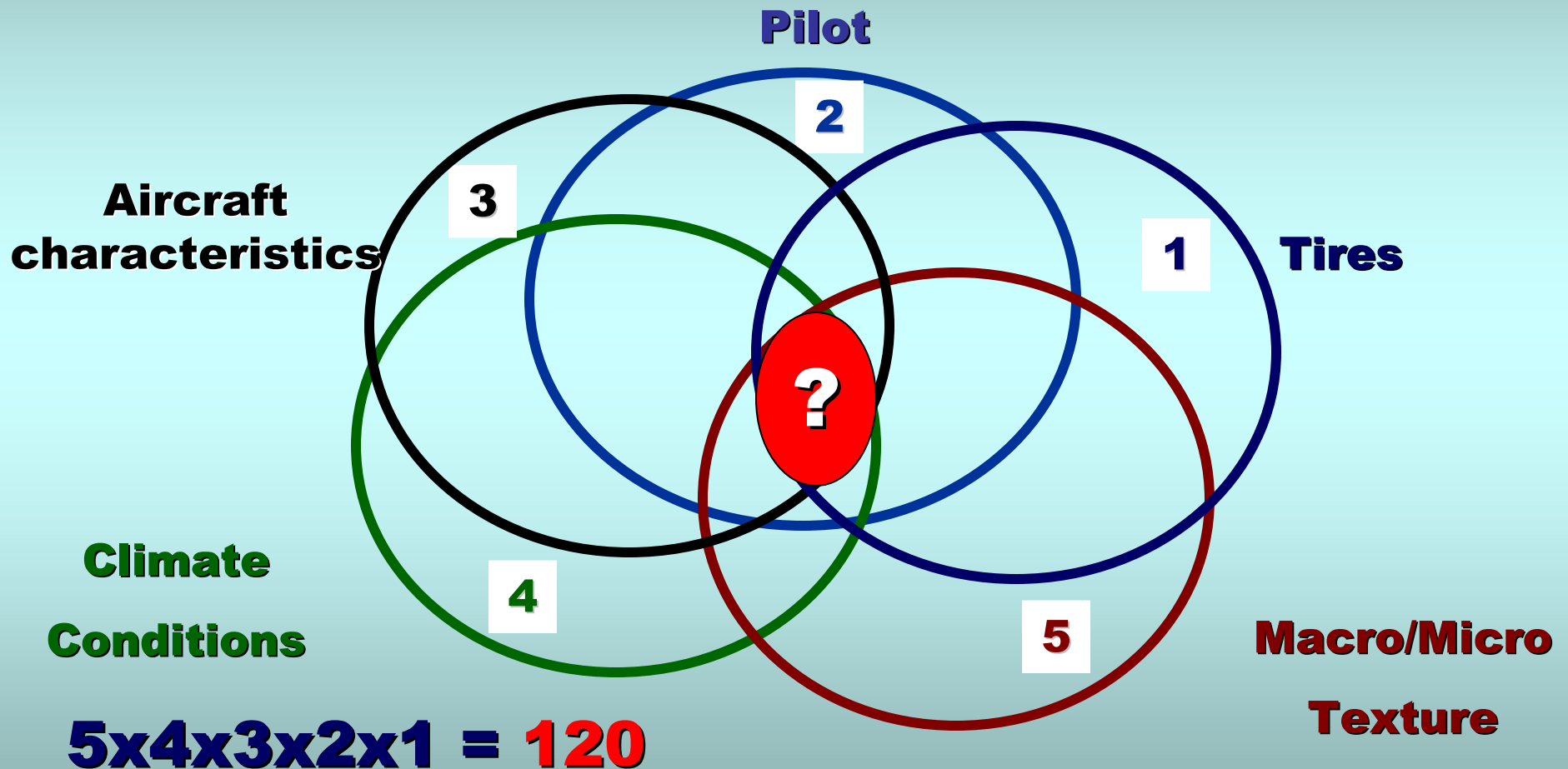


Overview on Runway Skid Resistance



Overview on Runway Skid Resistance

Aircraft/pavement/interaction



Overview on Runway Skid Resistance

What do we expect from this course?
Focusing maintenance

Porous Friction Course



We need maintenance!



Overview on Runway Skid Resistance

What do we expect from this course?
Focusing maintenance



Pavement surface

We need maintenance!



Overview on Runway Skid Resistance

What do we expect from this course?
Focusing maintenance



We need maintenance!



Overview on Runway Skid Resistance

What do we expect from this course?
Focusing maintenance



We can evaluate/measure



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What do we expect from this course?

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We can evaluate/measure



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What do we expect from this course?

Focusing maintenance



We can evaluate/measure



Overview on Runway Skid Resistance

What do we expect from this course?
Focusing maintenance



We can carry out maintenance



Overview on Runway Skid Resistance

What do we expect from this course?

Focusing maintenance

Before



After



What we look for



Overview on Runway Skid Resistance

Last year (Argentina) – Mike Roginski

“Yesterday is a history. Tomorrow is a mystery. Today is the present. This is why we call it a **GIFT”**

How about that, Mike?



“Why to be worried about TOMORROW if it will finish the **DAY AFTER TOMORROW!!!”**



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Important words in this course

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Think about!!!

If you are able to measure what you are talking about and express it in numbers you know something about that; but if you do not have this capacity, you will be a deficient and unsatisfactory “specie”

(William Thompson, 1850)

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Also, think about!!!

“We suffer too much with the little things that we still did not get and we are not much happy with the great things that we have”

(Shakespeare)



Overview on Runway Skid Resistance

Happy 10 years!!!

