



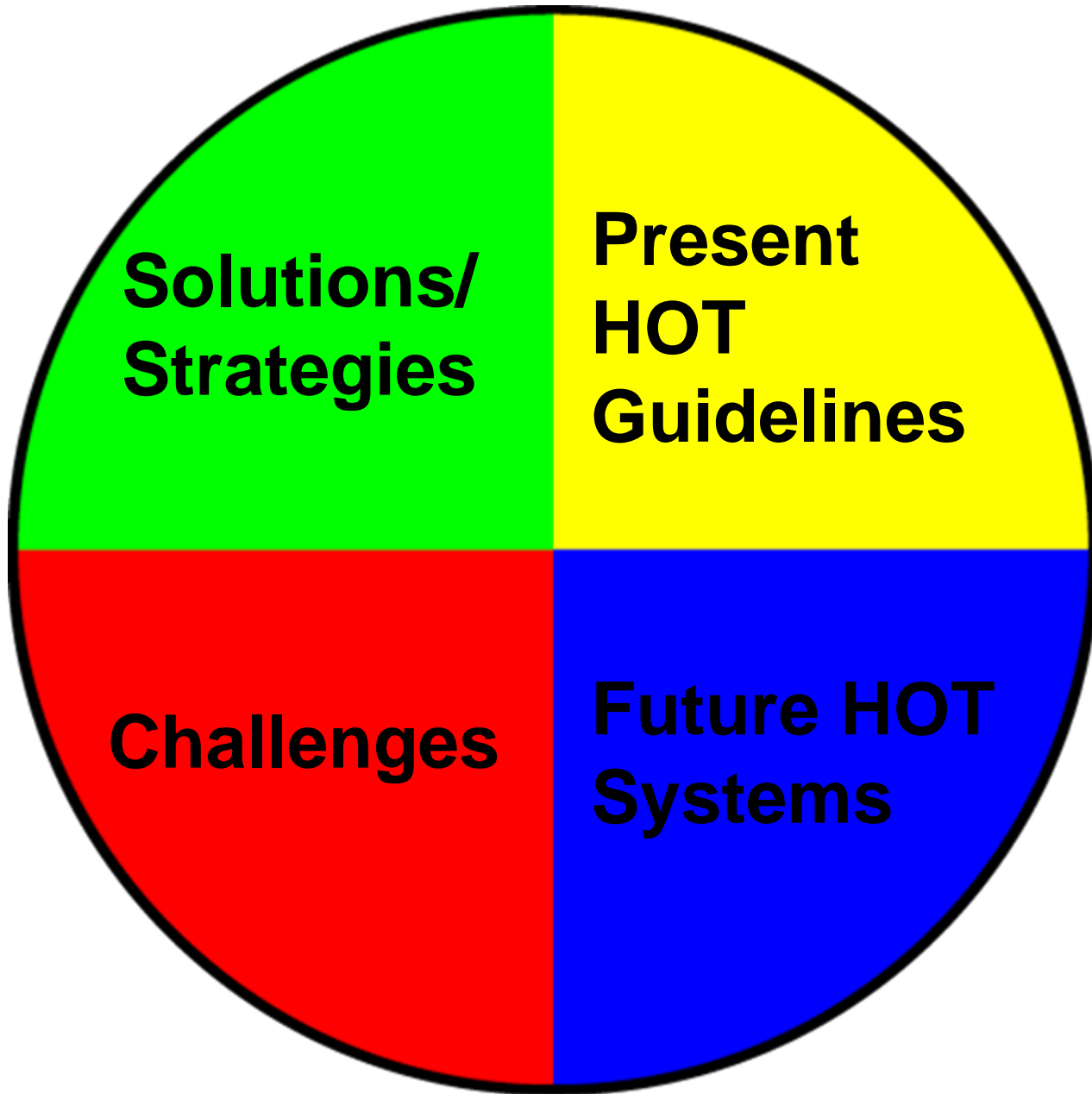
Library of Parliament / Bibliothèque du Parlement



4 Years ago

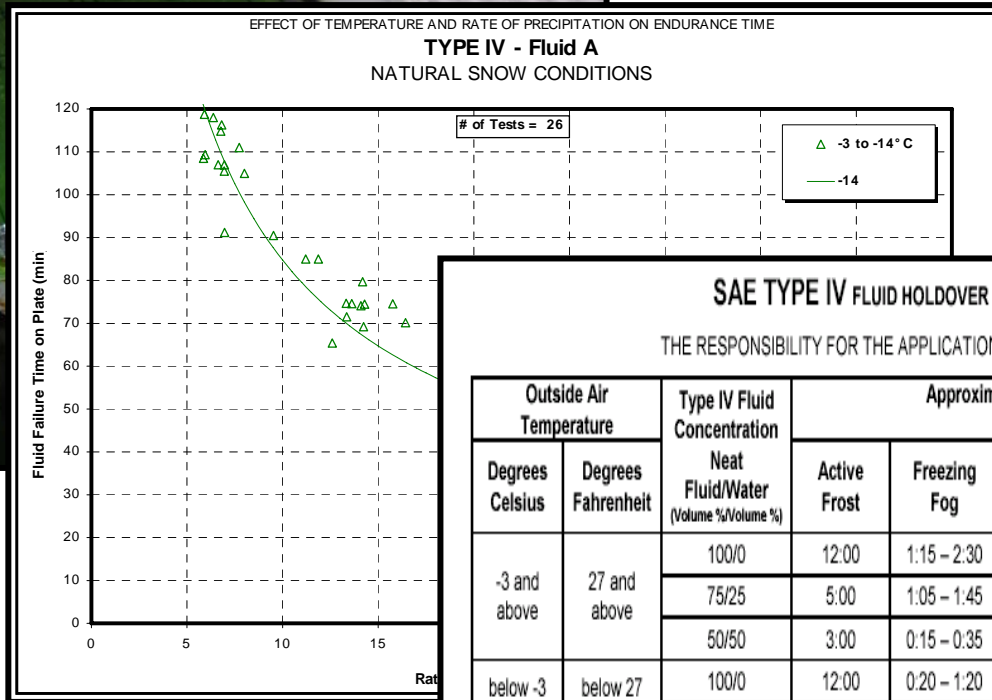
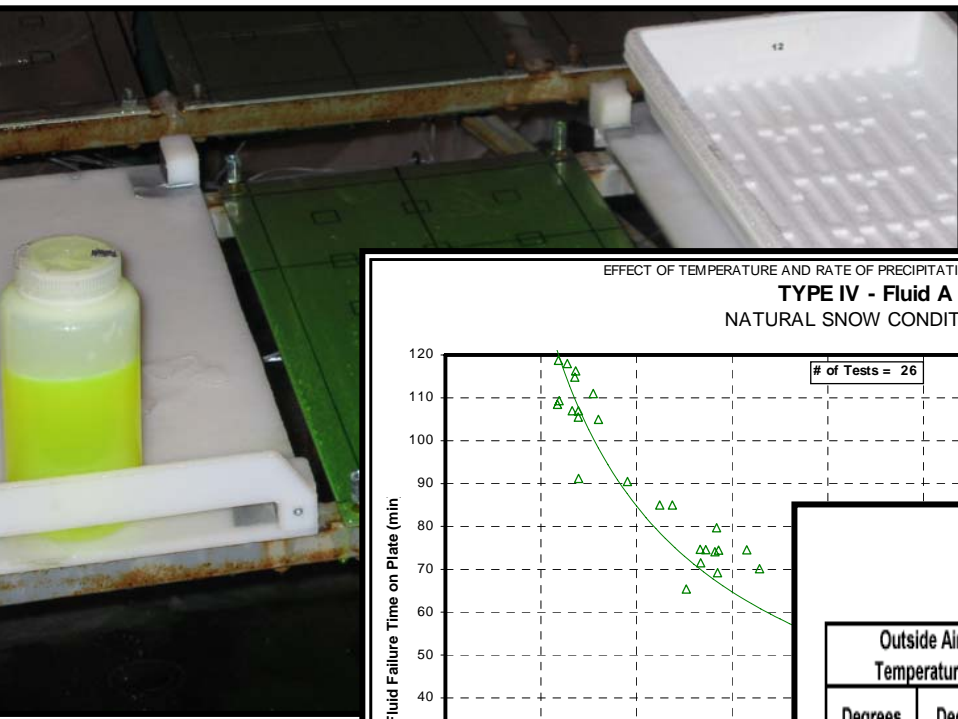








Generation of HOT Guidelines



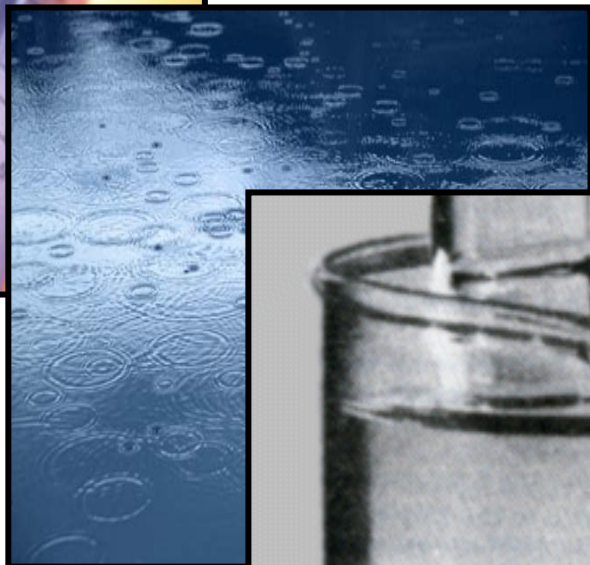
SAE TYPE IV FLUID HOLDOVER GUIDELINES FOR WINTER 2005-2006¹

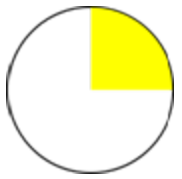
THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

Outside Air Temperature		Type IV Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)						Other ²		
Degrees Celsius	Degrees Fahrenheit		Active Frost	Freezing Fog	Snow or Snow Grains	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing			
-3 and above	27 and above	100/0	12:00	1:15 - 2:30	0:35 - 1:15	0:40 - 1:10	0:25 - 0:40	0:10 - 0:50	CAUTION: No holdover time guidelines exist		
		75/25	5:00	1:05 - 1:45	0:20 - 0:55	0:35 - 0:50	0:15 - 0:30	0:05 - 0:35			
below -3 to -14	below 27 to 7	50/50	3:00	0:15 - 0:35	0:05 - 0:15	0:10 - 0:20	0:05 - 0:10	CAUTION: No holdover time guidelines exist			
		100/0	12:00	0:20 - 1:20	0:20 - 0:40	0:20 - 0:45 ³	0:10 - 0:25 ³			0:10 - 0:20 ³	
below -14 to -25	below 7 to -13	75/25	5:00	0:25 - 0:50	0:15 - 0:35	0:15 - 0:30 ³	0:10 - 0:20 ³			CAUTION: No holdover time guidelines exist	
		100/0	12:00 ⁵	0:15 - 0:40 ⁵	0:15 - 0:30 ⁵						
below -25	below -13	100/0	Type IV fluid may be used below -25°C (-13°F) provided the freezing point of the fluid is at least 7°C (13°F) below the outside air temperature and the aerodynamic acceptance criteria are met. Consider use of Type I when Type IV fluid cannot be used.								

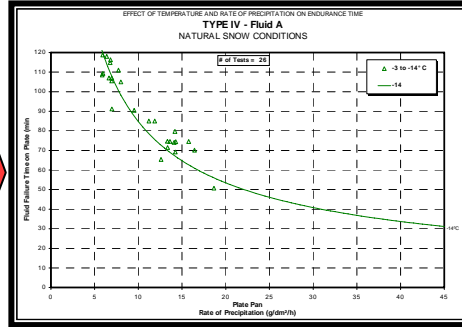
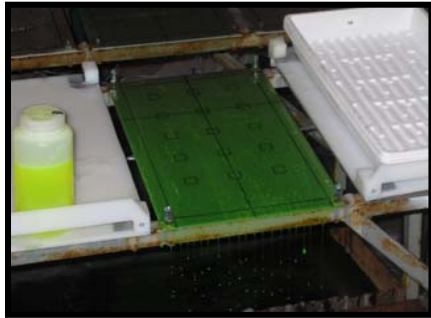


Pilot use of HOT Guidelines





Present use of HOT Guidelines

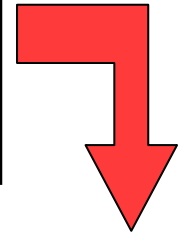


SAE TYPE IV FLUID HOLDOVER GUIDELINES FOR WINTER 2006-2006¹

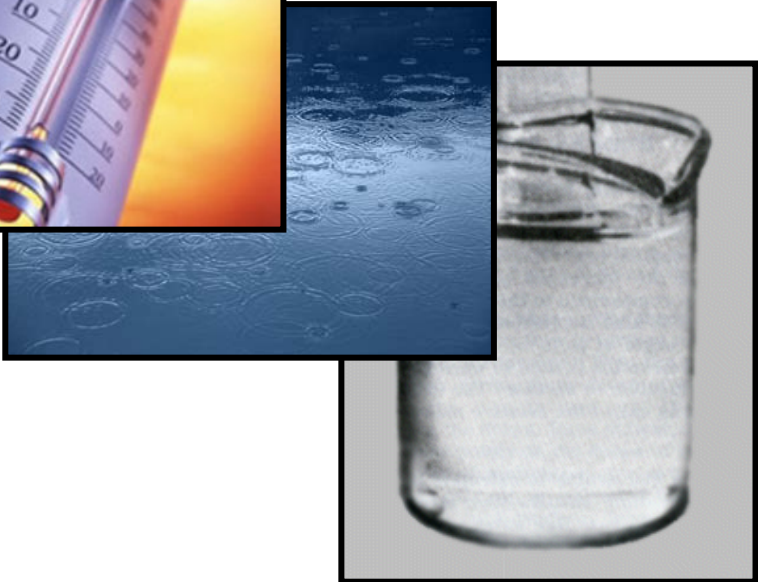
THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

Outside Air Temperature		Type IV Fluid Concentration	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)						
Degrees Celsius	Degrees Fahrenheit	Neat Fluid/Water (Volume Volume %)	Active Frost	Freezing Fog	Snow or Snow Grains	Freezing Drizzle ²	Light Freezing Rain	Rain on Cold Soaked Wing	Other ²
-3 and above	27 and above	1000	12:00	1:15 - 2:30	0:25 - 1:15	0:40 - 1:10	0:25 - 0:40	0:10 - 0:50	CAUTION No holdover time guidelines exist
		75/25	5:00	1:05 - 1:45	0:20 - 0:55	0:35 - 0:50	0:15 - 0:30	0:05 - 0:35	
		50/50	3:00	0:15 - 0:35	0:05 - 0:15	0:10 - 0:20	0:05 - 0:10		
below -3 to -14	below 27 to 7	1000	12:00	0:20 - 1:20	0:20 - 0:40	0:20 - 0:45 ²	0:10 - 0:25 ²		
	75/25	5:00	0:25 - 0:50	0:15 - 0:35	0:15 - 0:30 ²	0:10 - 0:20 ²			
below -14 to -25	below 7 to -13	1000	12:00 ²	0:15 - 0:40 ²	0:15 - 0:30 ²				
	below -13	1000							

Type IV fluid may be used below -25°C (-13°F) provided the freezing point of the fluid is at least 7°C (13°F) below the outside air temperature and the aerodynamic acceptance criteria are met. Consider use of Type I when Type IV fluid cannot be used.

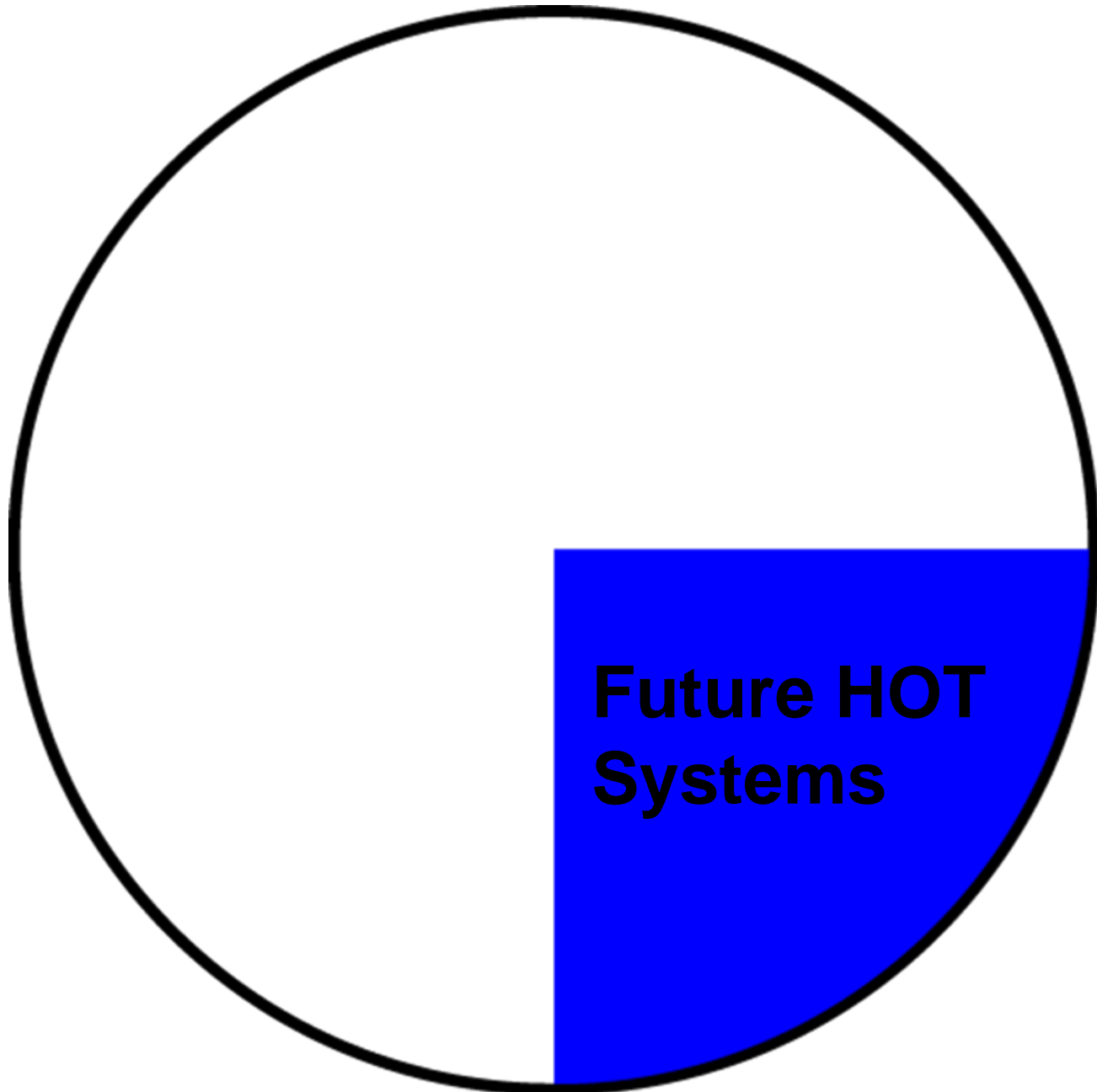


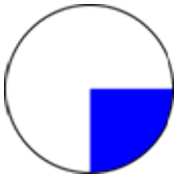
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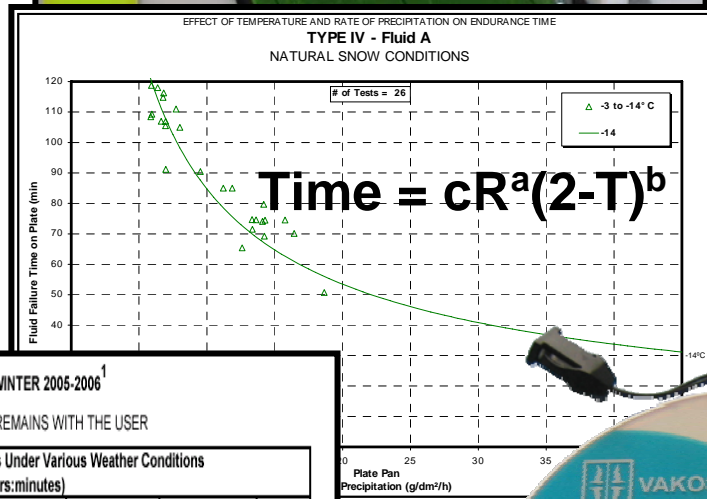
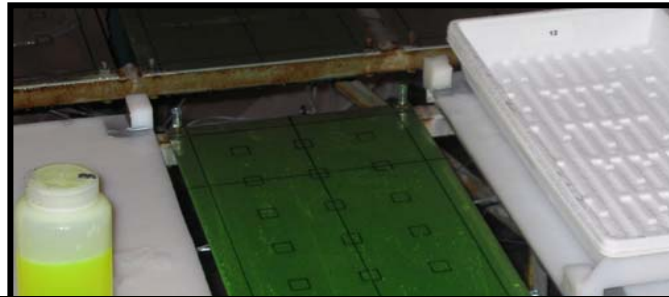
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Regression Coefficients



SAE TYPE IV FLUID HOLDOVER GUIDELINES FOR WINTER 2005-2006¹

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER

Outside Air Temperature		Type IV Fluid Concentration Neat Fluid/Water (Volume %/Volume %)	Approximate Holdover Times Under Various Weather Conditions (hours:minutes)							Other ²
Degrees Celsius	Degrees Fahrenheit		Active Frost	Freezing Fog	Snow or Snow Grains	Freezing Drizzle ⁴	Light Freezing Rain	Rain on Cold Soaked Wing		
-3 and above	27 and above	100/0	12.00	1:15 - 2:30	0:35 - 1:15	0:40 - 1:10	0:25 - 0:40	0:10 - 0:50	CAUTION: No holdover time guidelines exist	
		75/25	5.00	1:05 - 1:45	0:20 - 0:55	0:35 - 0:50	0:15 - 0:30	0:05 - 0:35		
		50/50	3.00	0:15 - 0:35	0:05 - 0:15	0:10 - 0:20	0:05 - 0:10			
below -3 to -14	below 27 to 7	100/0	12.00	0:20 - 1:20	0:20 - 0:40	0:20 - 0:45 ³	0:10 - 0:25 ³			
		75/25	5.00	0:25 - 0:50	0:15 - 0:35	0:15 - 0:30 ³	0:10 - 0:20 ³			
below -14 to -25	below 7 to -13	100/0	12.00 ⁵	0:15 - 0:40 ⁵	0:15 - 0:30 ⁵					
below -25	below -13	100/0	Type IV fluid may be used below -25°C (-13°F) provided the freezing point of the fluid is at least 7°C (13°F) below the outside air temperature and the aerodynamic acceptance criteria are met. Consider use of Type I when Type IV fluid cannot be used.							





Improved Weather Measurements

Temperature

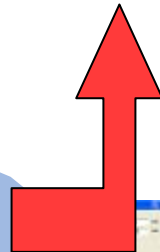
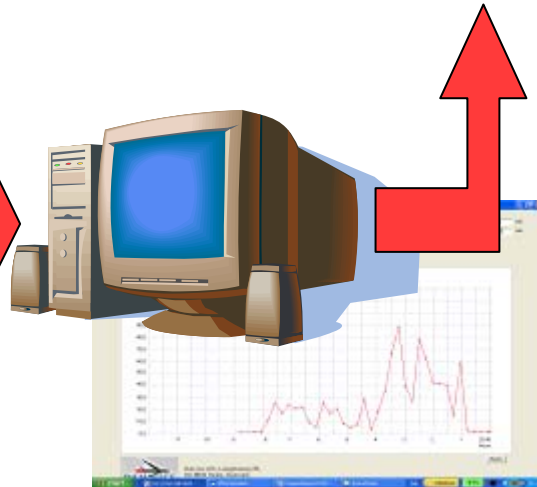
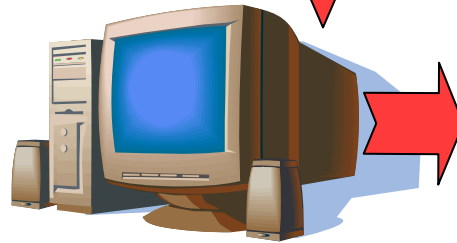
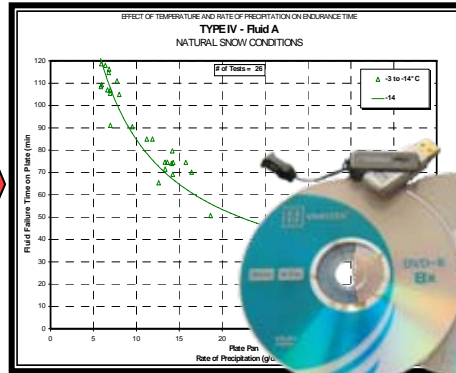
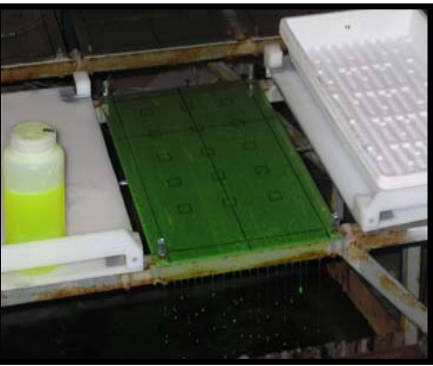
Precipitation Type

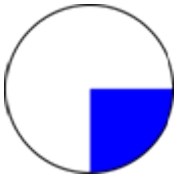
Precipitation Intensity (LWE)





HOT Determination System





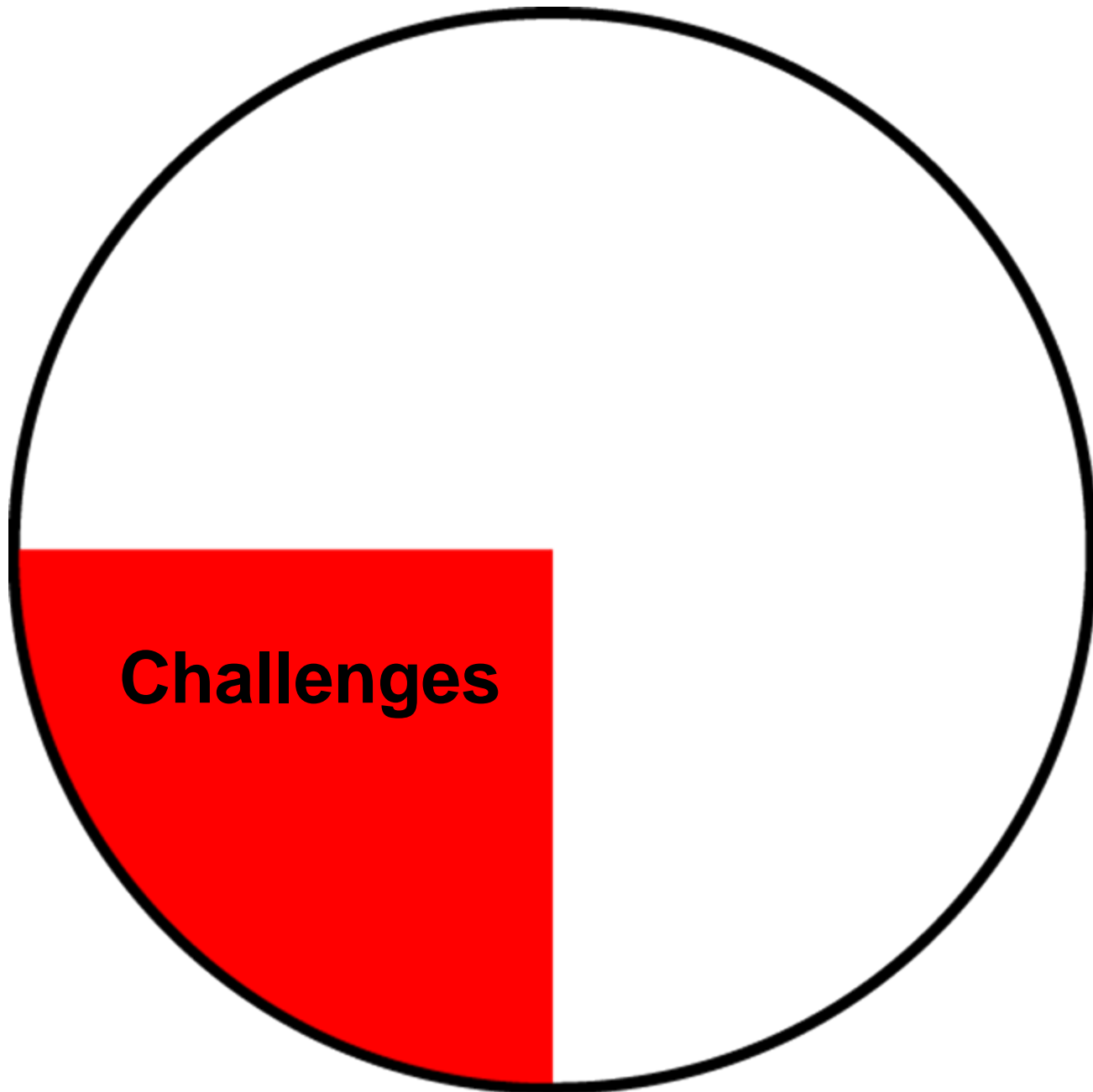
Benefits of HOTDS

Accurate HOT ⇒ Safer Operations

Less Confusion ⇒ Safer Operations

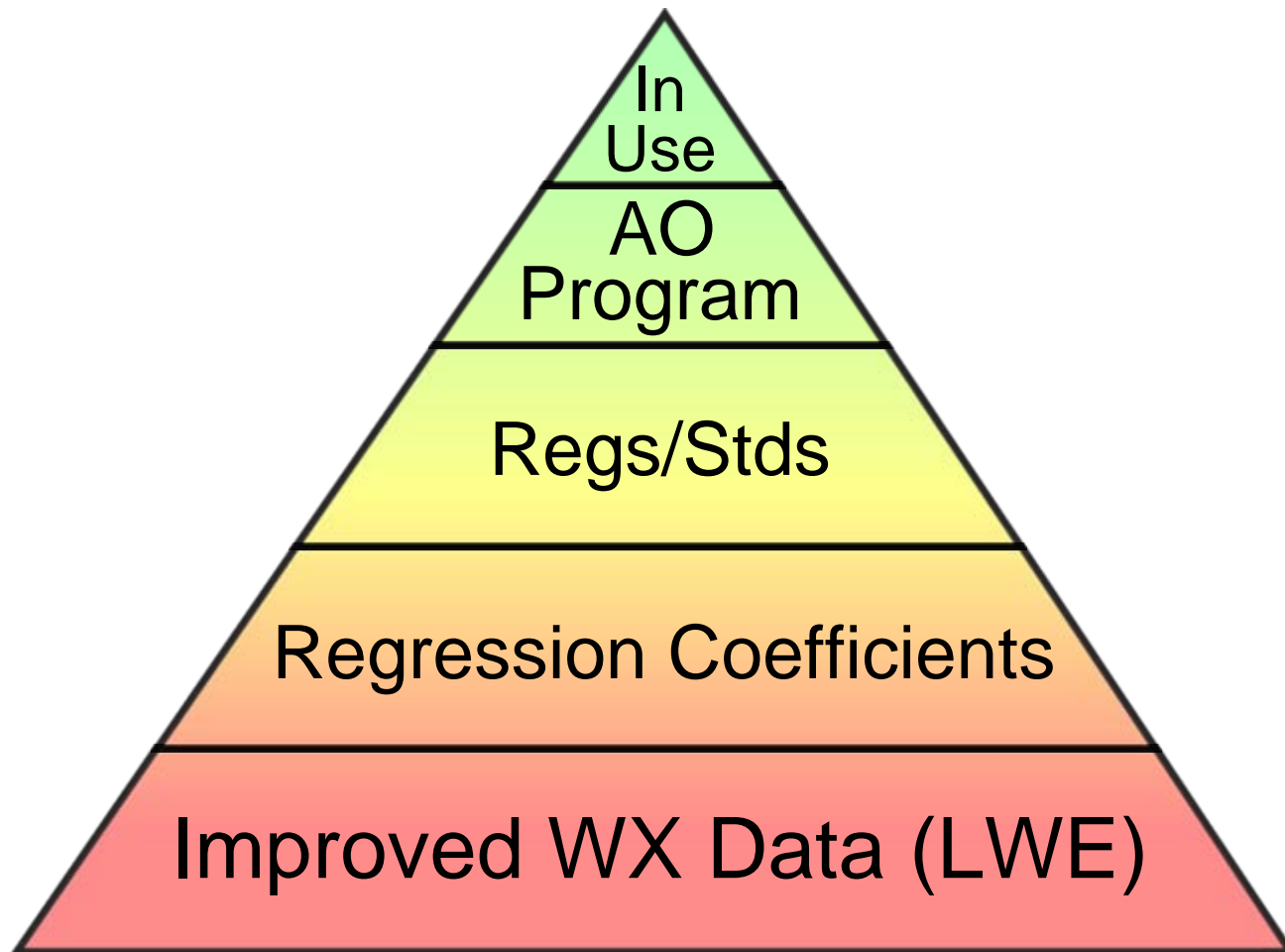
Less Workload ⇒ Less Stress

**Optimized Fluid Selection ⇒ Enviro Benefits
Cost Savings \$**





Implementation Challenges





AÉRO MAG 2000



Solutions/ Strategies

D-ICE A/S
DE-ICING DECISION SUPPORT



GTAA

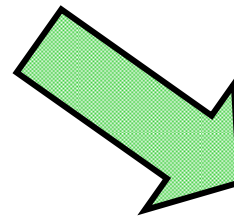


Transport Canada Transports Canada

Canada



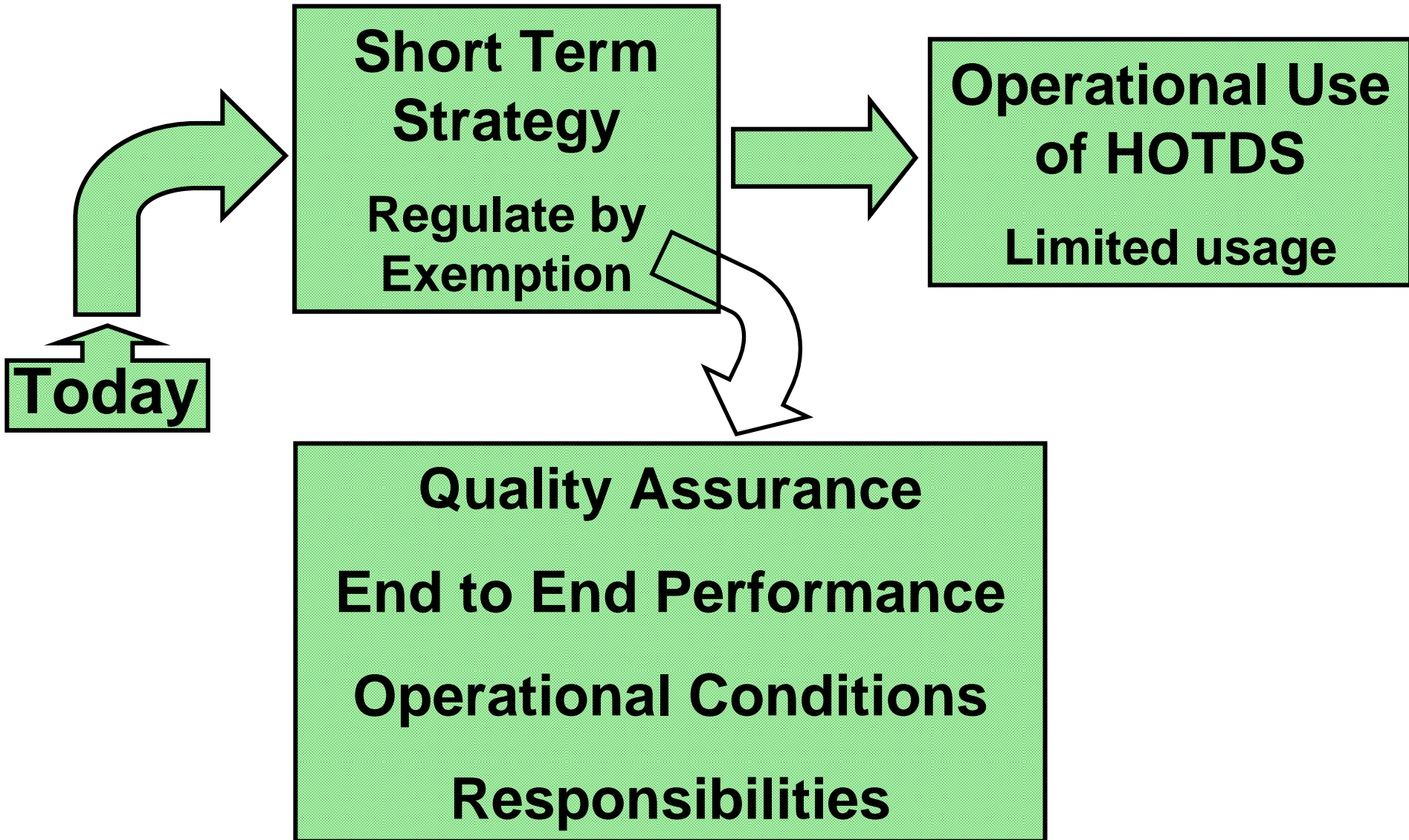
Improved Weather Data



LWE



Improved Weather Data - Short Term





Improved Weather Data – Long Term

Today

Long Term Strategy
WMO & ICAO
Recognition of
LWE

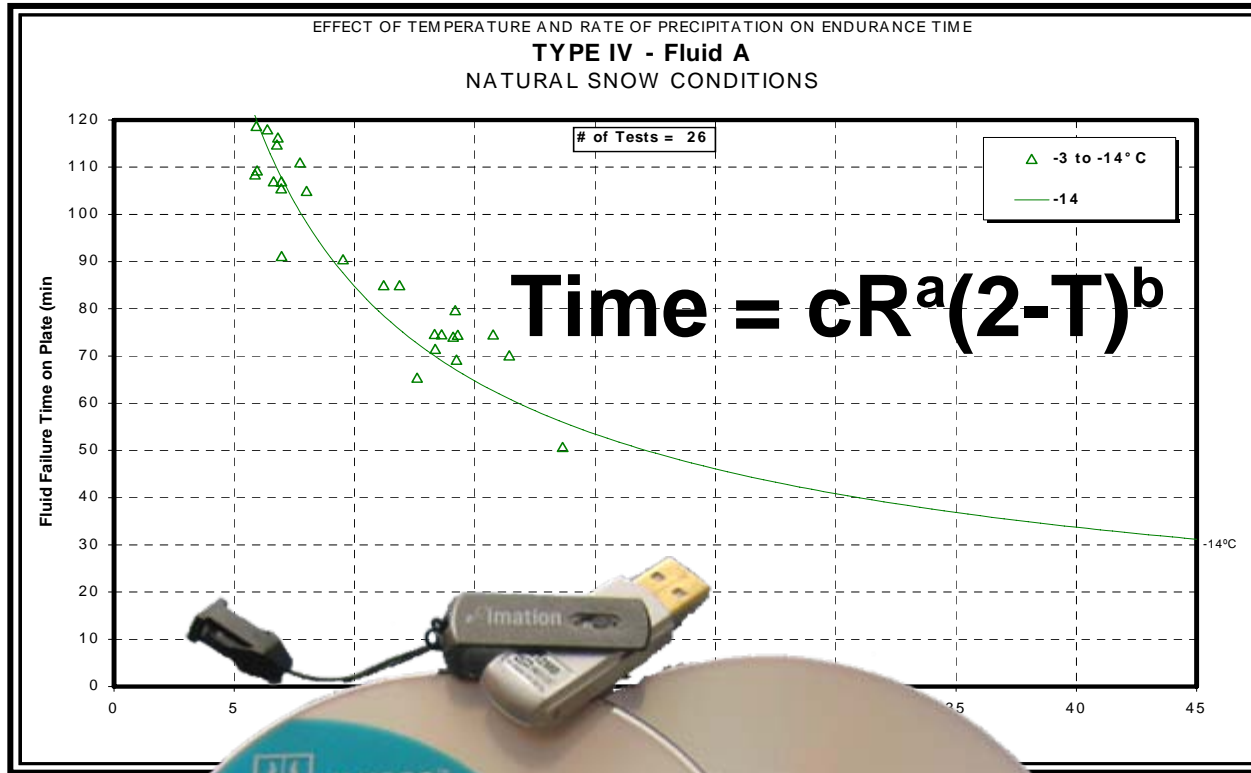
**Operational Use
of HOTDS**
Widespread usage

TC
**Submission/Presentation
to ICAO**
Aerodrome Meteorological Observation and Forecast Study Group



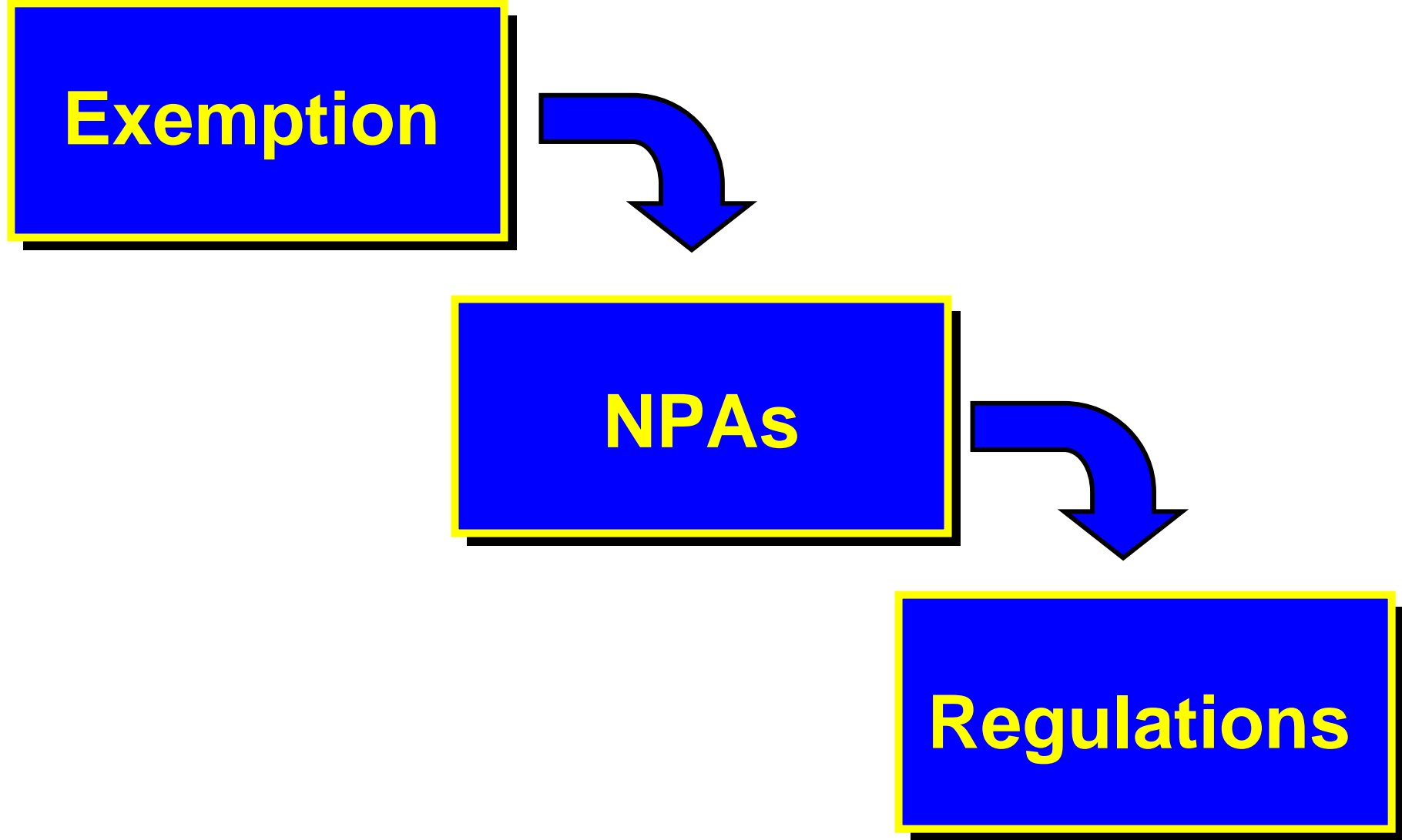


Regression Curves & Coefficients





From Exemption to Regulations





Air Operator Programs

Performance Declaration

Revised Company Operations Manual

Training

Locations

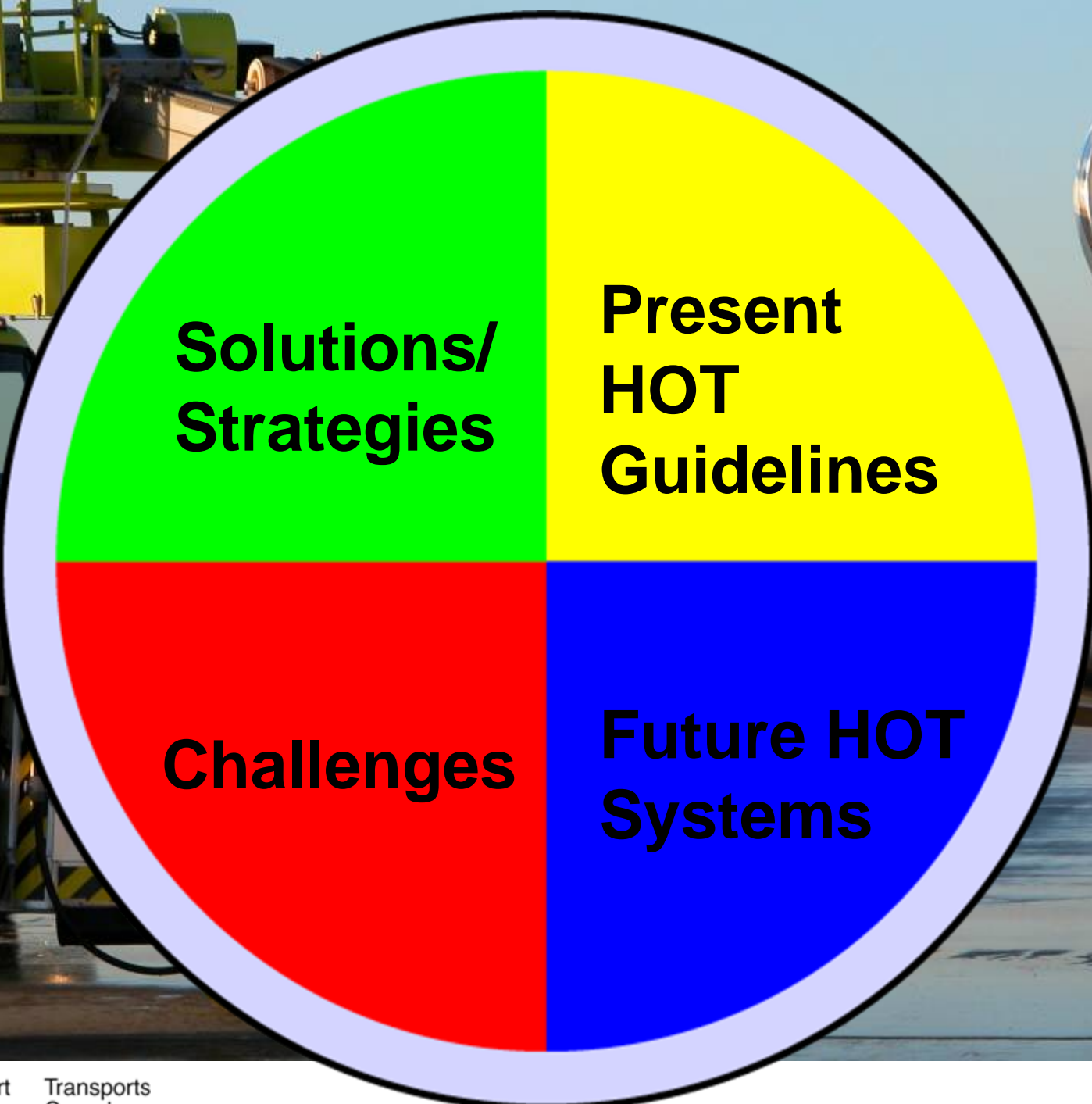
Contingency Plan





Operational Use





**Solutions/
Strategies**

**Present
HOT
Guidelines**

Challenges

**Future H
OT
Systems**



Transport
Canada

Transports
Canada

Canada