



**IHST Brasil**

## **Iniciativas, Atividades e Ferramentas Acessíveis de Prevenção**

JHSAT Co-Chair Industria: Ana Claudia Malagrino Galvão

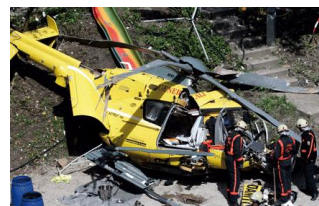
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6 de novembro de 2012



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### **Sumário**

- Iniciativa IHST - Introdução
- Atividades e Resultados do IHST Brasil
- Toolkits do IHST - Ferramentas
- Leaflets do EHEST
- IHST Self Risk Assessment Tool
- Como Interagir e Consultar



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## Introdução

# INICIATIVA IHST

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## O que é o IHST

- 1997 – CAST ( redução 80% de acidentes)
- 2005 – 1º IHSS em Montreal
  - Taxa de acidentes elevada
  - Nenhuma mudança significativa nos últimos 20 anos
  - Criação do IHST para atingir a mesma meta da aviação civil:

**Reduzir a taxa de acidentes em 80% até 2016**

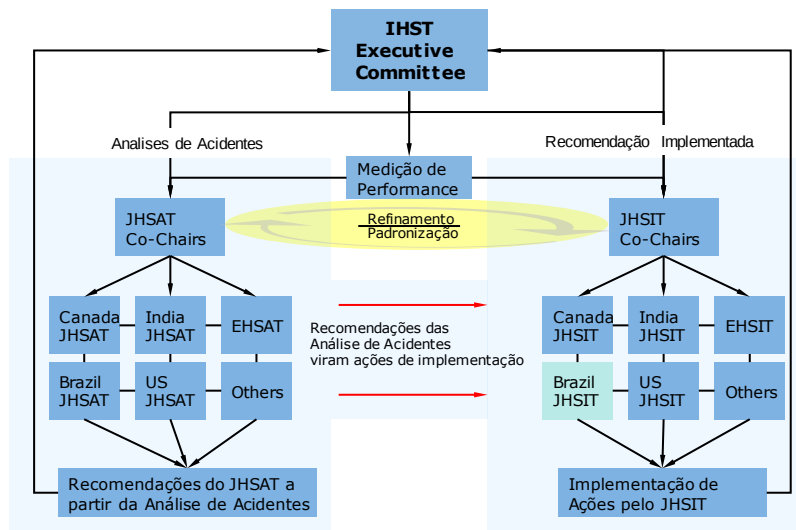
- Composto de operadores, fabricantes, mantenedores, reguladores e agências investigadoras de todo o mundo.

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## Iniciativa de Segurança do IHST Estrutura funcional de Análises, Implementação e Medição



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## As Premissas Básicas do Processo do IHST

- ✓ Análises e ações originadas a partir de dados sobre acidentes (somente relatórios finais)
- ✓ O envolvimento de diferentes representantes da indústria – Fabricantes, operadores, órgãos regulatórios, associações
- ✓ As ações serão medidas quanto a sua eficácia

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## Por que pensamos que nosso processo funciona?

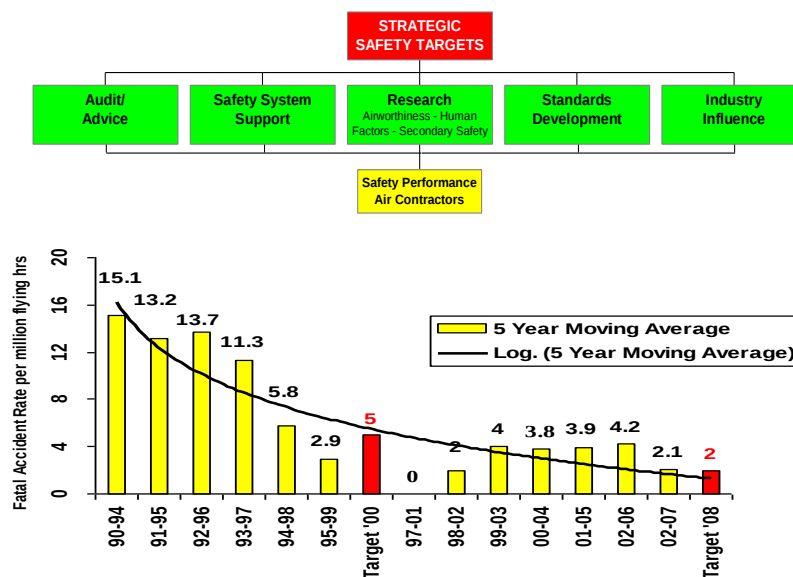
Três Exemplos:

- ✓ Aviação Comercial
- ✓ OGP/Shell Aircraft
- ✓ ALEA

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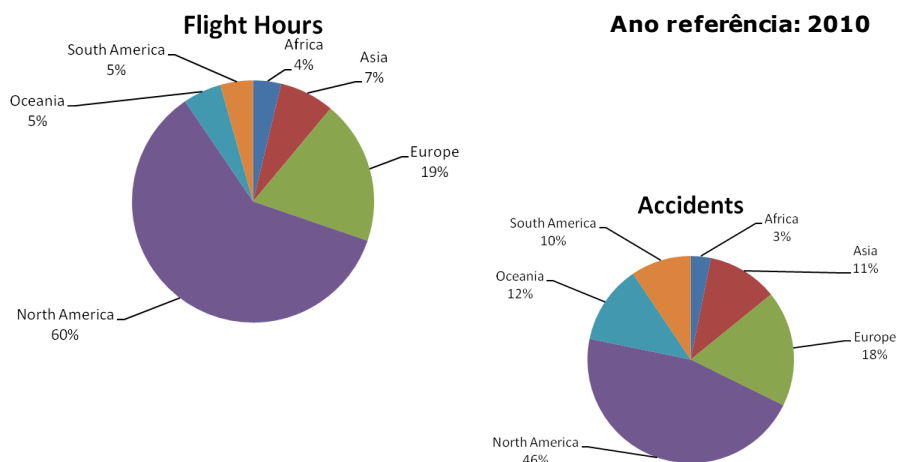


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## Distribuição Mundial de Acidentes

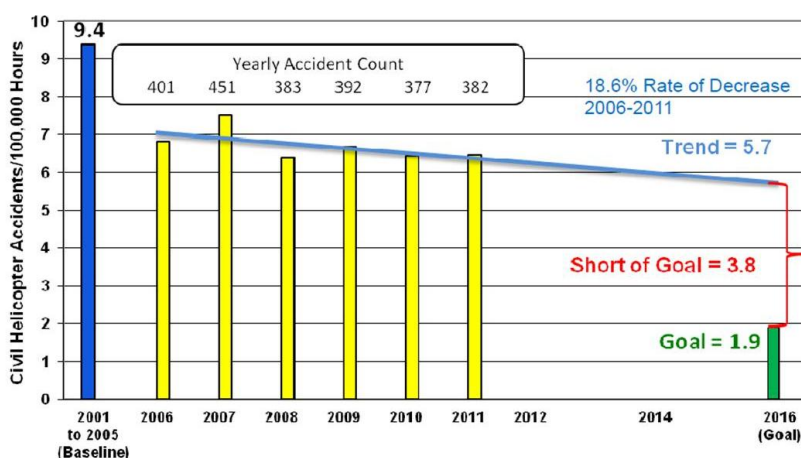


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## Taxa Mundial de Acidentes

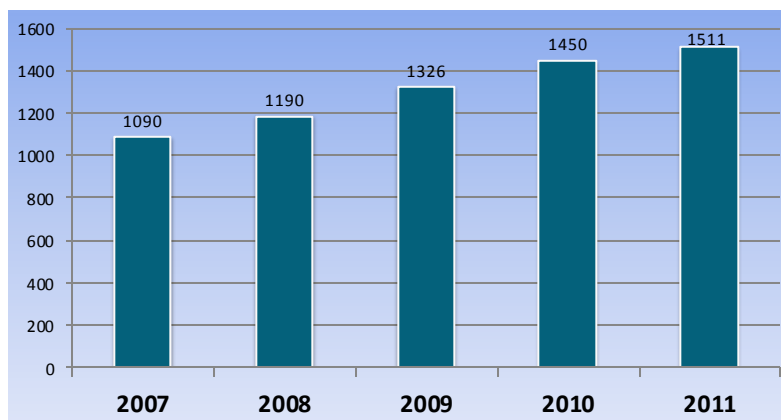


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## Frota de He Civos do Brasil



Fonte : ANAC

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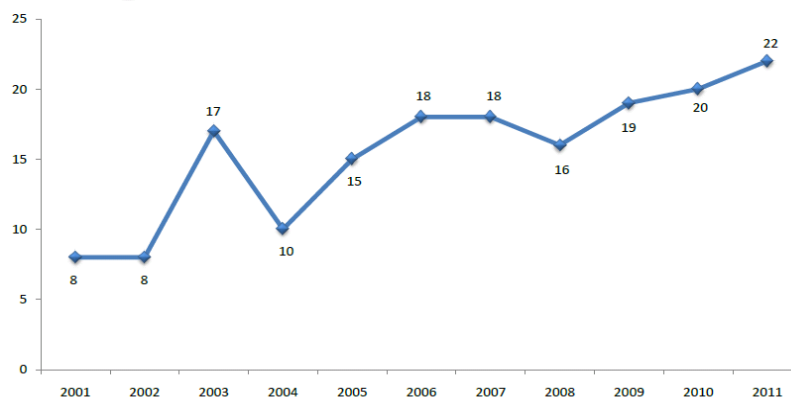


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## Acidentes com He Civos no Brasil



Acidentes Aeronáuticos na Aviação Civil Brasileira  
Total de Acidentes  
Helicóptero



Fonte : CENIPA

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## Resultados e Atividades

### IHST BRASIL

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## Componentes do IHST Brasil

Grupo JHSAT (Grupo de Análise) desde 2007:

- Co Chair : Ana Claudia Galvão (BHS)
- Co Chair Governo: CC Raul Barradas (Cenipa)

Grupo JHSIT (Grupo de Implementação) a partir de 2012:

- Co chair Industria: *TBA*
- Co Chair Governo: Bruno Villela (Marinha do Brasil)

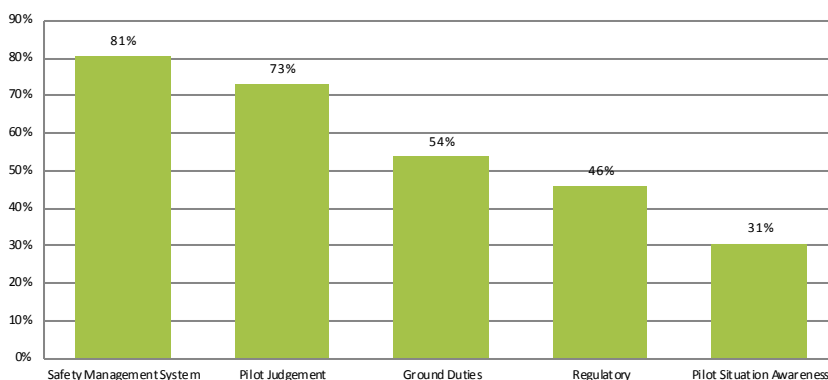
Participações desde 2007: Cenipa, BHS, Lider, Marinha do Brasil  
ABRAPHE, Turbomeca, Rolls Royce, Anac, Helibras, Bell, Petrobras  
(CCTA), ANAC, e mais recentemente Aviação do Exército.

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## Resultado da Análise dos Anos 2000, 2006 e 2007(BRASIL)

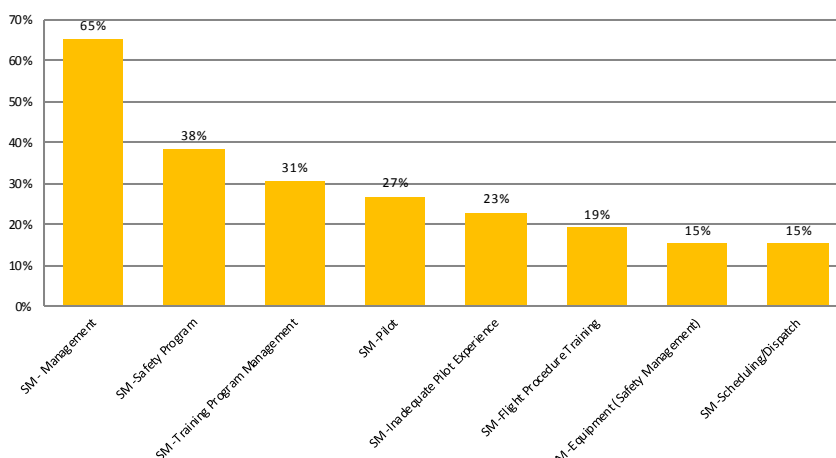


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## Detalhamento do grupo "Safety Management"

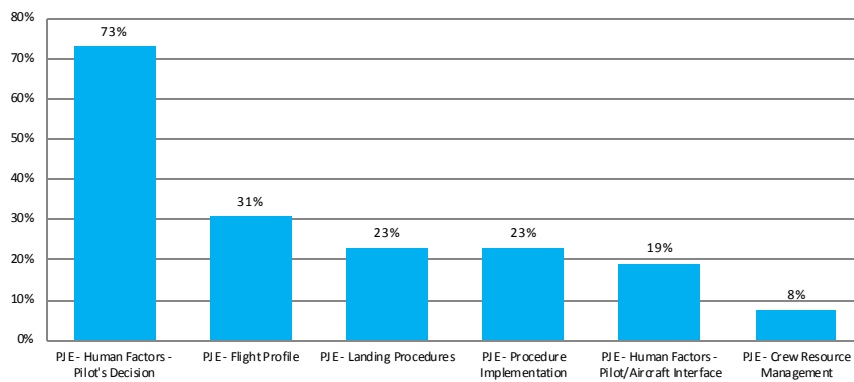


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## Detalhamento Grupo “Pilot Judgment...”

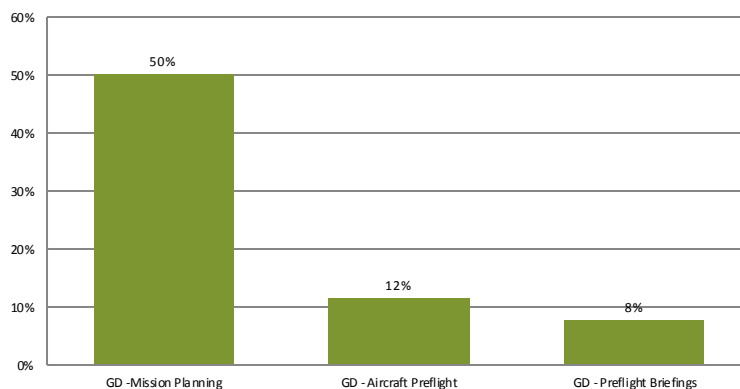


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## Detalhamento do Grupo “Ground Duties”



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## Comparação entre continentes

|                           | Europa | USA | Brasil     |
|---------------------------|--------|-----|------------|
| Pilot Judgment & Actions  | 68%    | 84% | <b>73%</b> |
| Safety Management         | 52%    | 43% | <b>81%</b> |
| Ground Duties             | 40%    | 37% | <b>54%</b> |
| Data Issues               | 37%    | 73% | <b>8%</b>  |
| Pilot Situation Awareness | 34%    | 31% | <b>31%</b> |
| Mission Risk              | 28%    | 19% | <b>27%</b> |
| Part / System Failure     | 22%    | 28% | <b>15%</b> |
| Maintenance               | 14%    | 20% | <b>27%</b> |
| Regulatory                | 8%     | 20% | <b>41%</b> |

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## Atividades e Desafios para 2012

1. Combinar os resultados das análises anuais realizadas;
2. Produzir o Relatório Final;
3. Criar o JHSIT – Brasil;
4. Traduzir os IHST Toolkits para Português; e
5. Disseminar os Toolkits em seminário e feiras de aviação.

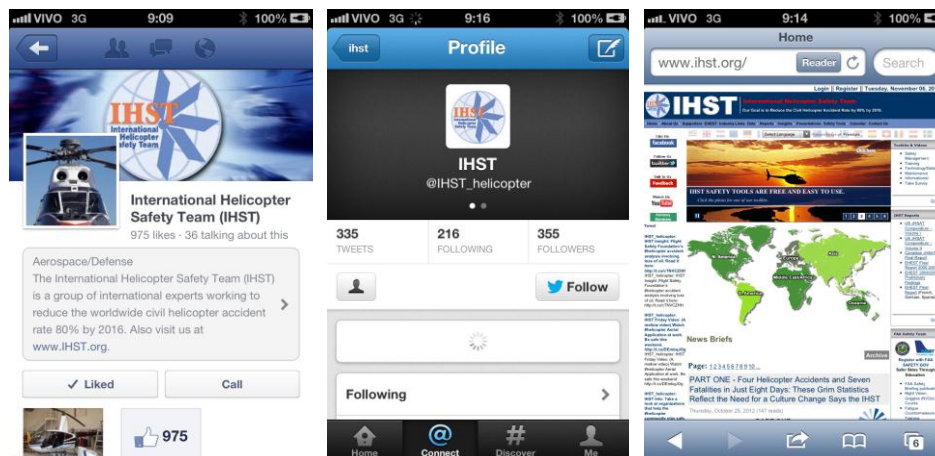


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## Sua Interação com o IHST



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Em [www.ihst.org](http://www.ihst.org)

## FERRAMENTAS DE PREVENÇÃO

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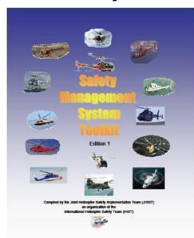


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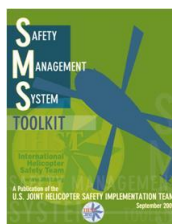
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## TOOLKITS DO IHST

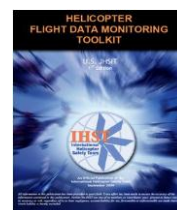
1ª Edição



2ª Edição



1ª Edição



2ª Edição



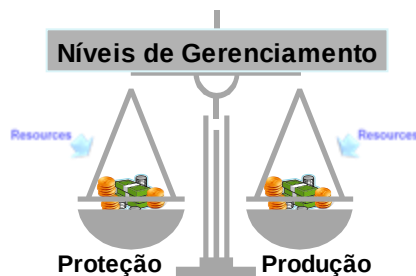
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## SMS

Integra segurança em todas as partes do sistema

- Treinamento
- Operações
- Manutenção
- RH
- Ferramentas
- Procedimentos
- Materiais
- Equipamentos
- Software



UM PROCESSO INTEGRADO DE SE FAZER A COISA CERTA!

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## SMS



### Capítulo 1 – Organização e Requisitos Humanos

- ✓ Orientações para o uso de políticas e procedimentos para atingir os níveis desejados de segurança
  - Políticas
  - Procedimentos
  - Responsabilidades Individuais
  - Autoridade
- ✓ Exercício de Planejamento de Segurança

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## SMS

| SAFETY PLANNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>"Safety management is the process of integrating safety principles into the framework of sound business management."</b><br/>—adapted from Generali and Simonds</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>The following exercise is intended to help you develop your "roadmap" to a successful safety program.</p> <p><b>Vision:</b><br/>A vision is what you want to achieve and how to establish your safety program goals. For instance, what do you want to accomplish as safety goals by the end of 2010, 2011 and 2015? These goals should be realistic and achievable, but should also "stretch" the organization's capabilities toward improvement. The process is to identify where you are now, and where you want to be in safety in a specific time. This is the guide to developing a roadmap of "how to get there."<br/>Now, write a "Vision Statement" describing what your safety program should achieve.</p> <p><b>A. Next year:</b></p> <p><b>B. In 2 years:</b></p> <p><b>C. In 5 years:</b></p> | <p><b>Goals:</b><br/>To put your vision in motion, you need to develop an action plan. To develop such a plan, you need to determine your priorities, create goals and set objectives. This is also your "strategy" for making your vision a reality.<br/>A goal is a step in carrying out a strategy. While goals can be set for individuals, in safety management, they are more often set for an organization. Goals can be nonspecific, as in – "foster public trust and confidence in 'XYZ' organization." It is better if they are realistic and measurable, i.e. – "Reduce damage and injury incidents in flight and ground operations by 50 percent in the next year."<br/>List three goals for your safety program:</p> <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol> <p><b>Objectives:</b><br/>As your plan develops, you get more and more specific. The next step is to define objectives toward meeting the safety goals. For example, to meet the goal of reducing damage and injury incidents by 50 percent, one objective could be: Right Operations and Aircraft Maintenance – develop and implement a plan to eliminate ground damage to aircraft.<br/>List three objectives you want to establish to accomplish your first goal:</p> <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol> <p><b>Action Steps:</b><br/>Action steps are the tasks individuals carry out to meet defined objectives. Action steps often have specific dates and times assigned for completion. Some examples of action steps for the "ground damage to aircraft objective" might be:</p> <ul style="list-style-type: none"> <li>■ Review data on previous incidents and identify trends.</li> <li>■ Survey the current procedures for weaknesses.</li> <li>■ Develop recommendations for improving procedures, including additions to training plans.</li> <li>■ Establish a timeline for implementation with all actions completed within 120 days.</li> </ul> <p>Select one of the objectives you wrote. Now, develop action steps that might be taken to support your objective:</p> <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> <li>6.</li> <li>7.</li> </ol> |

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# SMS

## Capítulo 2 – Elementos de um SMS

- ✓ Teorias e filosofias que formam a base dos elementos para o desenvolvimento de um SMS efetivo
- ✓ Tabelas de Avaliação do Guia do *FAA SMS Program Office Assurance*
- ✓ Avaliação de Cultura de Segurança (adaptado do Dr. James Reason)
  - 20 perguntas
  - Respostas graduadas até 10 pontos
  - Resultado em função da faixa de pontos alcançados

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| SAFETY POLICY: GENERAL EXPECTATIONS TABLE                                                                                                    |                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| The following table is extracted from the FAA SMS Program Office Assurance Guide.                                                            |                                                                 |
| <b>Management Accountability</b>                                                                                                             |                                                                 |
| Does the organization identify who is responsible for the quality of the organizational management processes (name, position, organization)? | SMS Framework: 1.2 B) 3) Old – SMS Standard None (R/A)          |
| <b>Procedure: Scope - Air Operators</b>                                                                                                      |                                                                 |
| Does the organization's SMS include the complete scope and life cycle of the organization's systems, including -                             |                                                                 |
| Flight operations?                                                                                                                           | SMS Framework: 1.0 B) 1) a) (1) Old – SMS Standard 4.1 A) 1 (P) |
| Operational control (Dispatch/flight following)?                                                                                             | SMS Framework: 1.0 B) 1) a) (2) Old – SMS Standard 4.1 A) 2 (P) |
| Maintenance and inspection?                                                                                                                  | SMS Framework: 1.0 B) 1) a) (3) Old – SMS Standard 4.1 A) 3 (P) |
| Cabin safety?                                                                                                                                | SMS Framework: 1.0 B) 1) a) (4) Old – SMS Standard 4.1 A) 4 (P) |
| Ground handling and servicing?                                                                                                               | SMS Framework: 1.0 B) 1) a) (5) Old – SMS Standard 4.1 A) 5 (P) |
| Cargo handling?                                                                                                                              | SMS Framework: 1.0 B) 1) a) (6) Old – SMS Standard 4.1 A) 6 (P) |
| Training?                                                                                                                                    | SMS Framework: 1.0 B) 1) a) (7) Old – SMS Standard 4.1 A) 7 (P) |

Uma tabela para cada Elemento de um SMS

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## SAFETY PRINCIPALS

- Operate in the safest manner possible.
- Never take unnecessary risks.
- Safety does not mean risk free.
- Identify and manage risk.
- Familiarity and prolonged exposure without a mishap leads to a loss of appreciation of risk.

## REPORTING SYSTEMS

- ✓ Keep it simple and accessible.
- ✓ Re-active and pro-active processes can overlap.
- ✓ Ensure people submitting reports get feedback.
- ✓ Find a simple way to file and track reports.

## HAZARD ID & REPORTING

If you see something... say something!



If you think it's wrong...  
If you know it's wrong...  
Either way...

**QUESTION IT.**  
**STOP IT!**  
**REPORT IT.**

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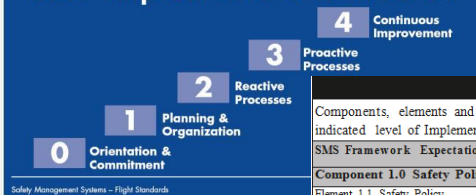


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## SMS

### Capítulo 3 – Orientações para implementação de um SMS

#### SMS Implementation Process



SMS Development Chart

| Components, elements and processes should be completed by the indicated level of Implementation. | Implementation Level |     |   |
|--------------------------------------------------------------------------------------------------|----------------------|-----|---|
|                                                                                                  | 1                    | 2   | 3 |
| SMS Framework Expectation                                                                        |                      |     |   |
| <b>Component 1.0 Safety Policy and Objectives</b>                                                |                      | X   |   |
| Element 1.1 Safety Policy                                                                        | X                    |     |   |
| Element 1.2 Mgmt Commitment and Safety Accountabilities                                          | (*)                  | X   |   |
| Element 1.3 Key Safety Personnel                                                                 | X                    |     |   |
| Element 1.4 Emergency Preparedness and Response                                                  |                      | X   |   |
| Element 1.5 SMS Documentation and Records                                                        |                      | X   |   |
| <b>Component 2.0 Safety Risk Management (SRM)</b>                                                |                      | (*) | X |
| Element 2.1 Hazard Identification and Analysis                                                   |                      | X   |   |
| Process 2.1.1 System and Task Analysis                                                           |                      |     | X |
| Process 2.1.2 Identify Hazards                                                                   |                      | X   |   |
| Element 2.2 Risk Assessment and Control                                                          |                      | X   |   |
| Process 2.2.1 Analyze Safety Risk                                                                |                      | X   |   |
| Process 2.2.2 Assess Safety Risk                                                                 |                      | X   |   |
| Process 2.2.3 Control/Mitigate Safety Risk                                                       |                      | X   |   |

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## SMS

| <b>SMS Implementation Checklist</b>                                                  |                           |                       |
|--------------------------------------------------------------------------------------|---------------------------|-----------------------|
| <b>Management Plan</b>                                                               | <b>Person Responsible</b> | <b>Date Completed</b> |
| Policies, objectives and requirements of SMS are published and distributed           |                           |                       |
| Organizational structure and key individuals and responsibilities are defined        |                           |                       |
| Elements of the SMS are defined                                                      |                           |                       |
| Expectations and objectives of the SMS are conveyed to employees                     |                           |                       |
| A method to identify and maintain compliance with safety and regulatory requirements |                           |                       |
| <b>Document &amp; Data Information Management</b>                                    | <b>Person Responsible</b> | <b>Date Completed</b> |
| Safety policies, objectives and SMS requirements publicized                          |                           |                       |
| Safety regulations that govern the organization identified                           |                           |                       |
| Pertinent safety and regulatory information provided to all employees                |                           |                       |
| Documentation describing the systems for each SMS component consolidated.            |                           |                       |
| Change control system in place for applicable documents                              |                           |                       |
| Personnel are educated on changes in documents                                       |                           |                       |
| Obsolete documents are promptly removed                                              |                           |                       |
| Periodic review of documents                                                         |                           |                       |

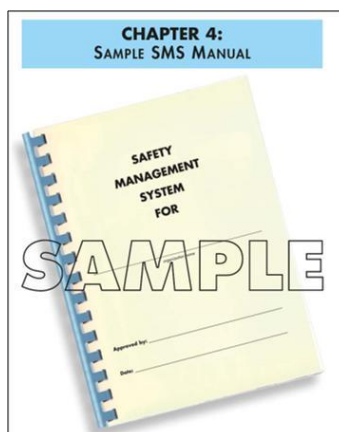
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## SMS

### *Capítulo 4 – Definições e um exemplo de manual de SMS*

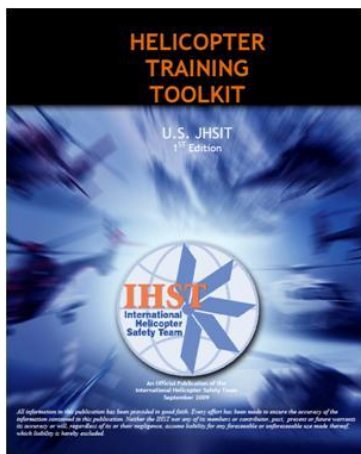


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## Treinamento



### Capítulo 1 – Tópicos de Treinamento

Apresenta os padrões para treinamento de pilotos em diversos níveis de proficiência e experiência

- Tópicos acadêmicos
- Habilidades de voo
- Emergências
- Treinamento Inicial e recorrente
- Planejamento de missões

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## Treinamento

### Capítulo 2 – Estabelecendo e Mantendo Programas de Treinamento

Apresenta os procedimentos e requisitos para a criação de um departamento de treinamento

- Documentos e Controle
- Registro de Treinamento
- Controle de Qualidade

### Capítulo 3 – Programas de Treinamento

Apresenta os assuntos a serem apresentados em cada curso

- Fator Humano
- Tomada de Decisão
- Gerenciamento de Risco



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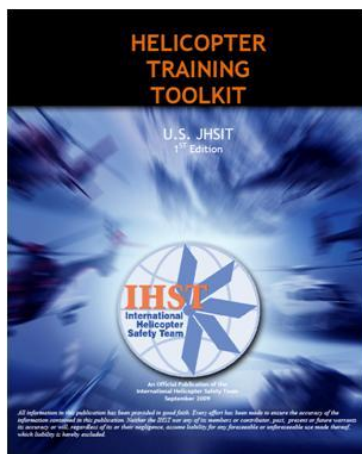
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|                                                             |                                                                              | Pre - Departure Checklist ~ Helo EMS |       |            |       |
|-------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------|-------|------------|-------|
|                                                             | Category                                                                     | Points                               | Score | Mitigation | Score |
| Meio Ambiente                                               | Environmental                                                                |                                      |       |            |       |
|                                                             | Precip (-, *, +)                                                             | 1 / 3 / 5                            |       |            |       |
|                                                             | Ceiling 1000' ~ 500' ~ 200' >                                                | 0 / 2 / 4                            |       |            |       |
|                                                             | Visibility 3nm ~ 2nm ~ 1nm >                                                 | 0 / 2 / 4                            |       |            |       |
|                                                             | Visibility restrictions (each; x precip)                                     | 2                                    |       |            |       |
| Voo                                                         | Night                                                                        | 3                                    |       |            |       |
|                                                             | Forecast: minimums, fog, icing                                               | 3                                    |       |            |       |
|                                                             | First (1 <sup>st</sup> ) Stop                                                |                                      |       |            |       |
|                                                             | Hospital with visual guidance                                                | -2                                   |       |            |       |
|                                                             | Hospital w/o visual guidance                                                 | 0                                    |       |            |       |
| Ops                                                         | Off helipad no / with obstacles                                              | 2 / 5                                |       |            |       |
|                                                             | Second (2 <sup>nd</sup> ) Stop (+ 3 <sup>rd</sup> , 4 <sup>th</sup> ...)     |                                      |       |            |       |
|                                                             | Hospital with visual guidance                                                | -2                                   |       |            |       |
|                                                             | Hospital w/o visual guidance                                                 | 0                                    |       |            |       |
|                                                             | Off helipad no / with obstacles                                              | 2 / 5                                |       |            |       |
| Fator Humano                                                | Operations                                                                   |                                      |       |            |       |
|                                                             | City, Suburban, Rural, Remote                                                | 2                                    |       |            |       |
|                                                             | Mountainous                                                                  | 4                                    |       |            |       |
|                                                             | 90% usable fuel required                                                     | 1                                    |       |            |       |
|                                                             | Class B or C airspace                                                        | 1                                    |       |            |       |
| Aeronave                                                    | Flight turned down by others for wx                                          | 5                                    |       |            |       |
|                                                             | Flight Crew                                                                  |                                      |       |            |       |
|                                                             | Two pilots                                                                   | -4                                   |       |            |       |
|                                                             | Single pilot > 1000 type & local EMS                                         | -2                                   |       |            |       |
|                                                             | Single pilot > 500 type & local EMS                                          | 0                                    |       |            |       |
| Instruções de uso                                           | Single pilot < 500 type & local EMS                                          | 3                                    |       |            |       |
|                                                             | Never been to destination (each)                                             | 2                                    |       |            |       |
|                                                             | Duty day (>12 hours, 6+ legs)                                                | 2                                    |       |            |       |
|                                                             | Back o' the clock                                                            | 5                                    |       |            |       |
|                                                             | Aircraft & Equipment                                                         |                                      |       |            |       |
| 8o. Seminário Internacional de Seg<br>6 de novembro de 2012 | Cockpit good for inadvertent IMC y/n                                         | -2 / 2                               |       |            |       |
|                                                             | Autopilot (in use)                                                           | -3                                   |       |            |       |
|                                                             | NVG yes / no night only                                                      | -1 / 2                               |       |            |       |
|                                                             | TCAS yes / no                                                                | -1 / 2                               |       |            |       |
|                                                             | EGPWS yes / no                                                               | -1 / 2                               |       |            |       |
|                                                             | WSPS yes / no                                                                | -1 / 2                               |       |            |       |
|                                                             | Deferred / MEL items (each)                                                  | 2                                    |       |            |       |
|                                                             | TOTAL                                                                        |                                      |       |            |       |
|                                                             | 1. Total Score                                                               |                                      |       |            |       |
|                                                             | 2. Compare to risk rating                                                    |                                      |       |            |       |
|                                                             | 3. Green good to GO, as is, but mitigate risks as necessary                  |                                      |       |            |       |
|                                                             | 4. Orange mitigate to Green band, as able, get management approval           |                                      |       |            |       |
|                                                             | 5. Red No Fly. Countermeasures required. Reduce to Yellow / Green band       |                                      |       |            |       |
|                                                             | 6. Refer to pre-approved mitigation (on back). Use as many as are applicable |                                      |       |            |       |
|                                                             | 7. Fill in mitigation column, above with coded item                          |                                      |       |            |       |
|                                                             | 8. Recalculate score, compare to risk rating                                 |                                      |       |            |       |
|                                                             | 9. Use mitigations on back in briefings or anytime during flight             |                                      |       |            |       |
|                                                             | 10. Return this form with flight documents                                   |                                      |       |            |       |

**Avaliação do Risco**

**Alguém pode fazer antes da decolagem**

## Treinamento



### Capítulo 4 – Desenvolvendo treinamento de qualidade

Apresenta estratégias para maximizar a aprendizagem

- Andragogia
- Qualidade da Instrução
- Planejamento de Aulas
- Avaliação
- Responsabilidade dos Treinadores

Diversos recursos para treinamento nos anexos

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## Manutenção

Ajudar um operador a avaliar suas atividades de manutenção

- ✓ Gerenciamento de Manutenção
- ✓ Procedimentos de Manutenção
- ✓ HUMS
- ✓ Documentação
- ✓ Controle de Estoque
- ✓ Controle de Qualidade de Combustível
- ✓ Controle da Qualidade
- ✓ Referências

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## HFDM



- ✓ Desenvolvido para ajudar operadores a implantar um programa de HFDM
- ✓ Benefícios de um programa de HFDM
- ✓ Relação com HUMS
- ✓ Diferentes denominações

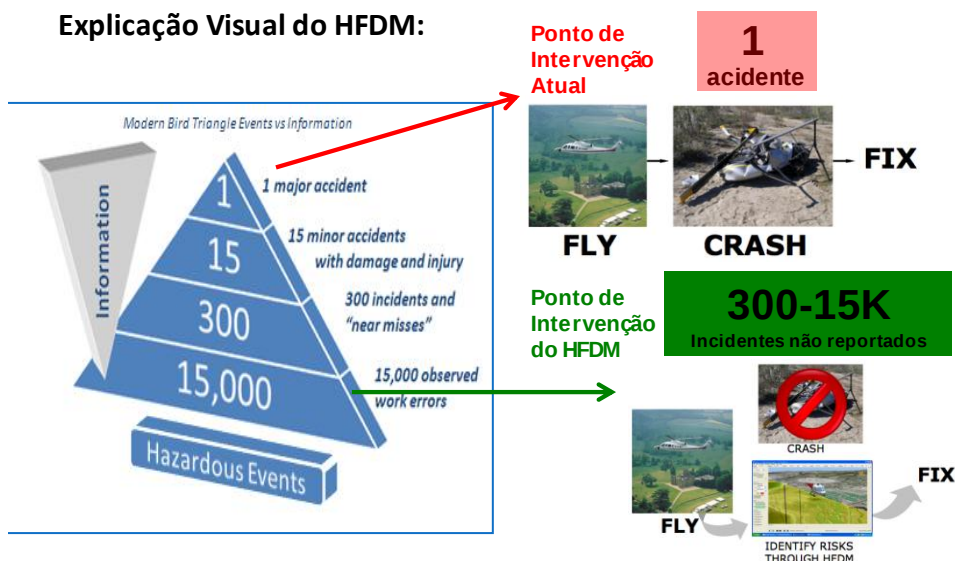
| Sigla | Nome                                     | Organização           |
|-------|------------------------------------------|-----------------------|
| FOQA  | Flight Operational Quality Assurance     | FAA                   |
| FDA   | Flight Data Analysis                     | ICAO                  |
| HFDM  | Helicopter Flight Data Monitoring        | CHC                   |
| HOMP  | Helicopter Operations Monitoring Program | Bristow/Air Logistics |
| LOMP  | Line Activity Monitoring Program         | PHI                   |
| MFOQA | Military Operational Quality Assurance   | U.S. Air Force        |

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## Explicação Visual do HFDM:



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## HFDM não é a “bala de prata”



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# HFDM

- ✓ Decisões gerenciais antes da implementação do programa
- ✓ Por onde começar

## HFDM Checklist

### 1. Planejamento e Preparação

- ✓ Identifique os interessados
- ✓ Estabeleça um Comitê Executivo
- ✓ Defina metas e objetivos
- ✓ Selecione a Equipe de HFDM
- ✓ Defina as medidas de salvaguarda de dados
- ✓ Selecione o equipamento e o software de análise
- ✓ Defina os eventos
- ✓ Faça uma introdução aos interessados
- ✓ Estabeleça um acordo com pilotos
- ✓ Aprovado ou não-aprovado
- ✓ Desenvolva um Plano de Implementação e Operação (I&O)
- ✓ Solicite aprovação da autoridade aeronáutica (se aplicável)

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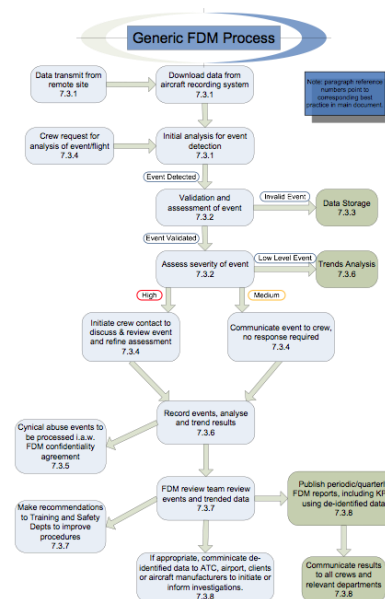


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# HFDM

## Boas práticas do **Global HFDM Steering Group**

- ✓ CHC Safety & Quality Summit 2010
- ✓ participação de empresas offshore dos USA e UK
- ✓ dicas práticas para o dia-a-dia de um programa de HFDM



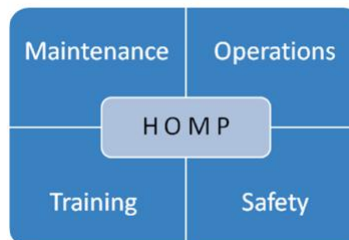
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## HFDM

- ✓ Anexos : excelentes referências
- ✓ Estudos de caso: modelo MOST
- ✓ Provedores de Equipamentos e Serviços
- ✓ Lista de equipamentos/Anv com STC aprovada pela FAA
- ✓ Event Set genérico
- ✓ HFAP tool (Helicopter Flight Analysis Profile Project)



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## HFDM

| Parameters                  | Yes/No |
|-----------------------------|--------|
| AP Discreets                | Yes    |
| ASE discreet                | Yes    |
| ASE1                        | No     |
| ASE2                        | No     |
| Autopilot Discreets         | Yes    |
| Autopilot Engaged Discreet  | Yes    |
| Autopilot Modes Discreets   | Yes    |
| AVAD discreet               | No     |
| Bleed air system discreets  | No     |
| Cabin Heater Discreet       | No     |
| Collective Pitch            | Yes    |
| Collective Position         | Yes    |
| Computed Power Margin Eng#1 | Yes    |
| Computed Power Margin Eng#2 | Yes    |
| Cyclic stick Position       | Yes    |
| Day/Night                   | Yes    |
| Diff Ng Discreet            | No     |
| EGPWS alerts discreet       | Yes    |
| Elapsed Time                | Yes    |
| Elevation                   | Yes    |
| Engine Oil Temp             | Yes    |
| Fire warning Discreet       | Yes    |
| FLI Margin computation      | Yes    |
| Flight Director Discreets   | Yes    |

### Instructions

1. Select Yes or NO in the list of parameters.
2. Then, go to the Available Events sheet to check the available events with these parameters.
3. More information about the events can be found on the other sheets.

### NOTE

It should be noted that some events suggest use of Airspeed or Radio Altitude and for some stand-alone systems which generate their own internal data, these parameters are not available. In such cases, with careful application, other parameters such as Groundspeed or Elevation (GPS Altitude) may be substituted, but due account should be taken of the differences between these and those suggested in the events listing

Introduction and Instructions Parameters Available Events RW Op Events RW System Events RW Mission Spec

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HFD

| Ops Events                                                     |                             | 114 | Systems Events                                 |  | 86 | Mission Specific                                      |          |  |
|----------------------------------------------------------------|-----------------------------|-----|------------------------------------------------|--|----|-------------------------------------------------------|----------|--|
| Event                                                          | Type                        |     | Event                                          |  |    | Event                                                 | Type     |  |
| OAT High - Operating Limits                                    | Ground                      |     | Cruise NG#1                                    |  |    | Rig Landing                                           | Offshore |  |
| Sloping Ground High Pitch Attitude                             | Ground                      |     | Cruise NG#2                                    |  |    | Rig Take-off                                          | Offshore |  |
| Sloping Ground High Roll Attitude                              | Ground                      |     | Cruise Torque Total                            |  |    | Wind Speed on Helidecks                               | Offshore |  |
| Rotor Brake on at excessive NR                                 | Ground                      |     | Cruise Torque#1                                |  |    | Roll Rate - max axis offshore                         | Offshore |  |
| Ground Taxi Speed - max                                        | Ground                      |     | Cruise Torque#2                                |  |    | Longitudinal Cyclic FWD & AFT Post Ldg Offshore       | Offshore |  |
| Air Taxi Speed - Max                                           | Ground                      |     | Eng #1 N1 AEO - max Transient (1 sec) (S76C++) |  |    | Excessive roll with AP on ground Post offshore        | Offshore |  |
| Excessive power during ground taxi                             | Ground                      |     | Eng #1 Power Margin S76C++                     |  |    | Excessive Pitch AP Engaged on Ground Post Onshore & O | Offshore |  |
| Pedal - max LH & RH taxi                                       | Ground                      |     | Eng #2 N1 AEO - max Transient (1 sec) (S76C++) |  |    | Pitch (high/low)- Offshore take off and landing       | Offshore |  |
| Excessive yaw rate on Ground in taxi                           | Ground                      |     | Eng #2 Power Margin S76C++                     |  |    | Excessive G During Offshore Approach                  | Offshore |  |
| Yaw Rate in Hover or on ground                                 | Ground                      |     | Engine Fire Warning - Air                      |  |    | Early Turn on Offshore Take Off at Night              | Offshore |  |
| High Lateral Acceleration (rapid cornering)                    | Ground                      |     | Engine Oil Temp                                |  |    | High Ground Speed Within 20 seconds of Rig Landing    | Offshore |  |
| High Longitudinal Acceleration (rapid braking)                 | Ground                      |     | Engine Running Duration ENG #1                 |  |    | Flight Through Hot Gas                                | Offshore |  |
| Cyclic movement limits during taxi (pitch or roll)             | Ground                      |     | Engine Running Duration ENG #2                 |  |    | Helideck movement limit exceedance                    | Offshore |  |
| Excessive Rate of Movement of Longitudinal & Lateral Cyclic    | Ground                      |     | GPWS: Active - Rait Min                        |  |    |                                                       |          |  |
| Lateral Cyclic - closest to LH & RH Rollover                   | Ground                      |     | Ng AEO - max (1 sec) Eng #1                    |  |    |                                                       |          |  |
| Excessive Cyclic Control with Insufficient Collective Pitch on | Ground                      |     | Ng AEO - max (1 sec) Eng #2                    |  |    |                                                       |          |  |
| Indevient Lnt off                                              | Ground                      |     | Ng AEO - max (20 sec)                          |  |    |                                                       |          |  |
| Day or night Landing or take off (Local Time)                  | Flight - Take off & Landing |     | Ng AEO - max (5 mins)                          |  |    |                                                       |          |  |
| Day or night Landing or take off (UTC)                         | Flight - Take off & Landing |     | Ng AEO - max continuous (1 sec)                |  |    |                                                       |          |  |
| Landing or take off specific location                          | Flight - Take off & Landing |     | Ng AEO - Max Take - Off (1 sec)                |  |    |                                                       |          |  |
| Gear extension & retraction - Airspeed limit                   | Flight - Take off & Landing |     | Ng AEO - max Transient (12 Seconds)            |  |    |                                                       |          |  |
| Gear extension & retraction - Height limit                     | Flight - Take off & Landing |     | Ng OEI - max (1 sec)                           |  |    |                                                       |          |  |
| Heavy landing                                                  | Flight - Take off & Landing |     | Ng OEI - max (2 mins)                          |  |    |                                                       |          |  |
| High Ground Speed Prior to TD                                  | Flight - Take off & Landing |     | Ng OEI - max (30 sec)                          |  |    |                                                       |          |  |
| Airspeed - V speed exceedences                                 | Flight -Speed               |     | Ng Split - largest                             |  |    |                                                       |          |  |
| High Airspeed - Low Altitude                                   | Flight -Speed               |     | Nr - max (1sec. Power Off)                     |  |    |                                                       |          |  |
| Low Airspeed at altitude                                       | Flight -Speed               |     | Nr - max (20sec. Power Off)                    |  |    |                                                       |          |  |
| Airspeed on Departure (<= 300ft)                               | Flight -Speed               |     | Nr - max (post)                                |  |    |                                                       |          |  |
| High Airspeed - Power Off                                      | Flight -Speed               |     | Nr - max (pre)                                 |  |    |                                                       |          |  |
| Downwind Flight Within 60 seconds of Take-Off                  | Flight -Speed               |     | Nr - max with Rotor Brake (post)               |  |    |                                                       |          |  |

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LEAFLETS DO EHEST

HELIicopter AIRMANSHIP

HE 2

OFF AIRFIELD LANDING SITE OPERATIONS

HE 3

DECISION MAKING

HE 4

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## LEAFLETS DO EHEST



|                                          |    |
|------------------------------------------|----|
| Introduction                             | 5  |
| 1.0 Knowledge                            | 7  |
| 1.1 Learning from the mistakes of others |    |
| 1.2 Recurrent Training                   |    |
| 1.3 Personal Limitations                 |    |
| 2.0 Pre-flight preparations              | 9  |
| 2.1 Paperwork                            |    |
| 2.2 Weather                              |    |
| 2.3 VFR Navigation                       |    |
| 2.4 Radio                                |    |
| 2.5 Weight and Balance                   |    |
| 2.6 Performance                          |    |
| 2.7 Fuel Planning                        |    |
| 2.8 Destination                          |    |
| 3.0 Flying practice                      | 13 |
| 3.1 Pre-Flight                           |    |
| 3.2 Fueling                              |    |
| 3.3 Passengers and Baggage               |    |
| 3.4 Take-off                             |    |
| 3.5 En-route                             |    |
| 3.6 Airspace                             |    |
| 3.7 Radio/Transponder                    |    |
| 3.8 En-route Decision                    |    |
| 3.9 Degraded Visual Environment (DVE)    |    |
| 3.10 Lost                                |    |
| 3.11 Control Considerations              |    |
| 3.12 Environmental                       |    |
| 3.13 Wake Turbulence and Rotor Wash      |    |
| 3.14 Circuit Procedures                  |    |
| 3.15 Landing                             |    |
| 4.0 Special Considerations               | 19 |
| 5.0 Summary                              | 21 |
| 6.0 Helicopter Ground Operations Signals | 22 |

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## LEAFLETS DO EHEST



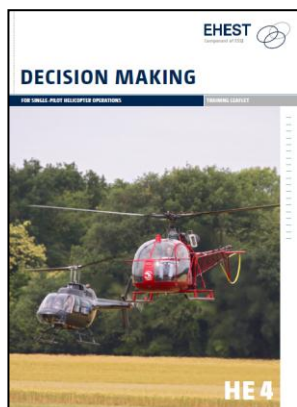
|                                               |    |
|-----------------------------------------------|----|
| Introduction                                  | 5  |
| 1.0 Planning and Preparation                  | 6  |
| 2.0 Landing Site Identification               | 8  |
| 3.0 Landing Site Recce                        | 9  |
| 3.1 Introduction                              |    |
| 3.2 Types of Recce                            |    |
| 3.3 The Recce                                 |    |
| 3.4 The Circuit                               |    |
| 4.0 Types of Approach                         | 16 |
| 4.1 Single Angle Approach                     |    |
| 4.2 Double Angle Approach                     |    |
| 4.3 Vertical Approach                         |    |
| 5.0 Manoeuvring in the LS                     | 18 |
| 6.0 Departure                                 | 20 |
| 6.1 Towering Take Off                         |    |
| 6.2 Vertical Climb (to outside ground effect) |    |
| 7.0 Pilot Errors                              | 22 |

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## LEAFLETS DO EHEST



|                                                         |    |
|---------------------------------------------------------|----|
| Introduction                                            | 5  |
| 1.0 Human Factors Affecting Decision Making             | 6  |
| 1.1 Introduction                                        |    |
| 1.2 Hazardous attitudes                                 |    |
| 1.3 Behavioural traps & biases                          |    |
| 1.4 Stress and stress management                        |    |
| 1.5 Health and performance                              |    |
| 1.6 Fatigue, tiredness                                  |    |
| 2.0 Decision Making                                     | 12 |
| 2.1 The Rasmussen's SRK model                           |    |
| 2.2 The Recognition Primed Decision-Making (RPDM) model |    |
| 3.0 Decision Error Factors                              | 15 |
| 4.0 Decision Making Models                              | 16 |
| 4.1 NASA model                                          |    |
| 4.2 The OODA Loop model                                 |    |
| 4.3 How to improve Decision Making                      |    |
| 5.0 Summary of Key Points                               | 20 |
| 6.0 Definitions & Acronyms                              | 21 |

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## Avaliação de Risco (pré-voo)

Planilha para cada tipo de missão:

- HEMS Mono
- HEMS Crew
- Treinamento – Checks
- Transporte Mono
- Transporte Crew
- Lazer – Voo Privado
- Ambiente Visual Degradado
- Manutenção
- Combate a Incêndios

### Avalia

- ✓ Tripulação
- ✓ Missão
- ✓ ANV
- ✓ Meio Ambiente
- ✓ Pressão Externa

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## Avaliação de Risco (pré-voo)

### PRE-FLIGHT RISK MANAGEMENT CHECKLIST

| MULTI CREW                 |                                                                                                                                                                                                                                                                                    | Initial Score                         | Final Score                           |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|
| TRAINER                    |                                                                                                                                                                                                                                                                                    |                                       | MITIGATION                            |
| <b>PERSONAL CONDITIONS</b> |                                                                                                                                                                                                                                                                                    |                                       |                                       |
| Physical                   | No problems: Physically in shape.<br>Nuisance, not completely in shape.<br>Headache, cold, fever, toothache.                                                                                                                                                                       | <input checked="" type="checkbox"/> 1 | <input checked="" type="checkbox"/> 0 |
| Medication                 | No medications in the last 24 hours.<br>Over the counter medication.<br>Prescription medication. Attention and driving impairing medication.                                                                                                                                       | <input checked="" type="checkbox"/> 1 | <input checked="" type="checkbox"/> 1 |
| Sleep                      | Well slept.<br>Moderate sleep or no sleep in the last 13 hours.<br>Poor sleep.                                                                                                                                                                                                     | <input checked="" type="checkbox"/> 0 | <input checked="" type="checkbox"/> 0 |
| Fatigue                    | No fatigue.<br>Moderate fatigue.<br>Mentally or physically fatigued.                                                                                                                                                                                                               | <input checked="" type="checkbox"/> 2 | <input checked="" type="checkbox"/> 1 |
| Food & drink               | Adequately nourished and hydrated.<br>Flight conducted during breakfast, lunch or dinner time. 4 to 6 hours without eating. 2 to 4 hours without drinking.<br>More than 6 hours from last meal. More than 4 hours without drinking.<br>Hot weather and no drinking water on board. | <input checked="" type="checkbox"/> 0 | <input checked="" type="checkbox"/> 0 |
| Physiologic                | Physiologically relieved.<br>Medium mission duration with no rest facilities available.<br>Long mission duration with no rest facilities available.                                                                                                                                | <input checked="" type="checkbox"/> 1 | <input checked="" type="checkbox"/> 1 |
| Emotion                    | Not emotionally involved.<br>Emotionally involved. Little private problems.<br>Emotionally stressed. Legal, financial or family problems.                                                                                                                                          | <input checked="" type="checkbox"/> 2 | <input checked="" type="checkbox"/> 2 |
| <b>RECENCY</b>             |                                                                                                                                                                                                                                                                                    |                                       |                                       |
| Total flight time          | Over 1000 hours total flight time.<br>Between 300 and 1000 hours total flight time.<br>Below 300 hours total flight time.                                                                                                                                                          | <input checked="" type="checkbox"/> 2 | <input checked="" type="checkbox"/> 1 |
| Flight time on type        | Over 300 hours flight time on type.<br>Between 100 and 300 hours flight time on type.<br>Below 100 hours flight time on type.                                                                                                                                                      | <input checked="" type="checkbox"/> 1 | <input checked="" type="checkbox"/> 1 |

RESET SCORES

INSERT QUESTION

DELETE QUESTION

INSERT SINGLE LINE

DELETE SINGLE LINE

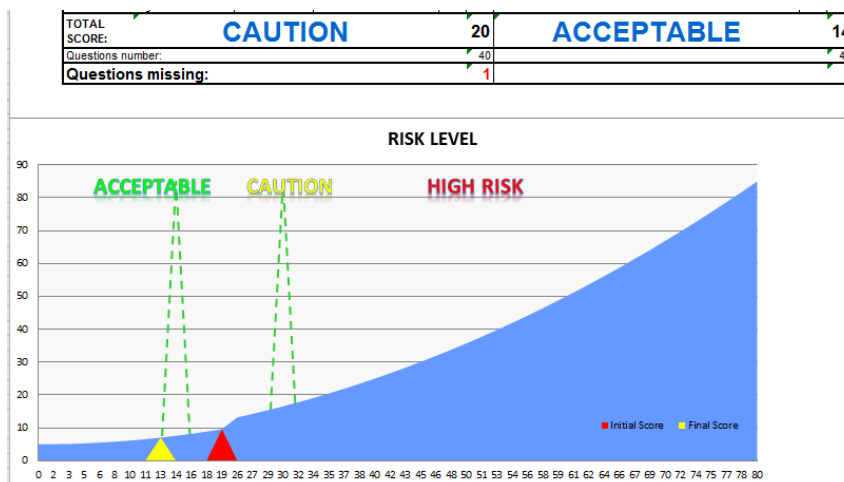
ADD NEW SHEET

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## Avaliação de Risco (pré-voo)



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# IHST Self Risk Assessment Toolkit

| JHSAT FLEET RECOMMENDATION                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Not compliant or in place | Partially implemented but no defined schedule for full implementation | Partially implemented with plan and schedule for full implementation | Fully implemented |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|-------------------|
| <b>SAFETY MANAGEMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                                                                       |                                                                      |                   |
| Safety Management System documented and in place.                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |                                                                       |                                                                      | x                 |
| Provide for non-punitive safety event reporting and make proactive use of safety information to create awareness of known hazards and reduce the risk of accidents                                                                                                                                                                                                                                                                                                         |                           | x                                                                     |                                                                      |                   |
| Documented SOPs and policies that cover crew awareness of critical flight systems, operational risk management and appropriate Aeronautical Decision Making (ADM) training. SOPs developed for preflight preparation, maneuver briefings for training flights, weather launch / abort criteria, selection and ground survey of remote or unimproved sites, ground / landing zone crew coordination, operation of external load equipment, and                              |                           |                                                                       | x                                                                    |                   |
| Evaluate the continuing performance of employees and operations as well as adherence to maintenance policy and procedures and compliance with Instructions for Continued Airworthiness (ICA).                                                                                                                                                                                                                                                                              |                           | x                                                                     |                                                                      |                   |
| Establish oversight and training as required based on those                                                                                                                                                                                                                                                                                                                                                                                                                |                           | x                                                                     |                                                                      |                   |
| Formalized risk assessment process integrated into all operations. Include identification of the risks associated with the mission, weather assessment, specific in-flight maneuvers, flying in close proximity to the ground or obstacles and performing out-of-envelope operations. Provide recurring training for assessing risks that promotes a safety culture of the organization that encourages aborting or canceling a flight when the risk factors don't justify | x                         |                                                                       |                                                                      |                   |
| <b>TRAINING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                                                                       |                                                                      |                   |
| Initial and recurrent training in helicopter preflight procedures and emergencies as described in the Rotorcraft Flying Handbook and the emergency procedures outlined in the UEM rotorcraft flight manual, in aeronautical decision making (ADM), risk management, aircraft performance capabilities and limitations                                                                                                                                                      | x                         |                                                                       |                                                                      |                   |
| Regular use of simulators as part of the training program                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |                                                                       | x                                                                    |                   |
| Provide comprehensive transition training to new make and model                                                                                                                                                                                                                                                                                                                                                                                                            |                           | x                                                                     |                                                                      |                   |
| Promote increased use of training aids, training devices in training                                                                                                                                                                                                                                                                                                                                                                                                       |                           |                                                                       |                                                                      | x                 |
| Comprehensive training on inadvertent flight into instrument meteorological conditions (IMC) and specialized mission training                                                                                                                                                                                                                                                                                                                                              | x                         |                                                                       |                                                                      |                   |

## Manutenção e Equipamentos

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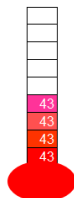
# IHST Self Risk Assessment Toolkit

## SCORE SUMMARY

| Not compliant | Partially | Partially | Fully |
|---------------|-----------|-----------|-------|
| 4             | 5         | 4         | 4     |

% COMPLIANCE WITH IHST RECOMMENDATIONS

43%

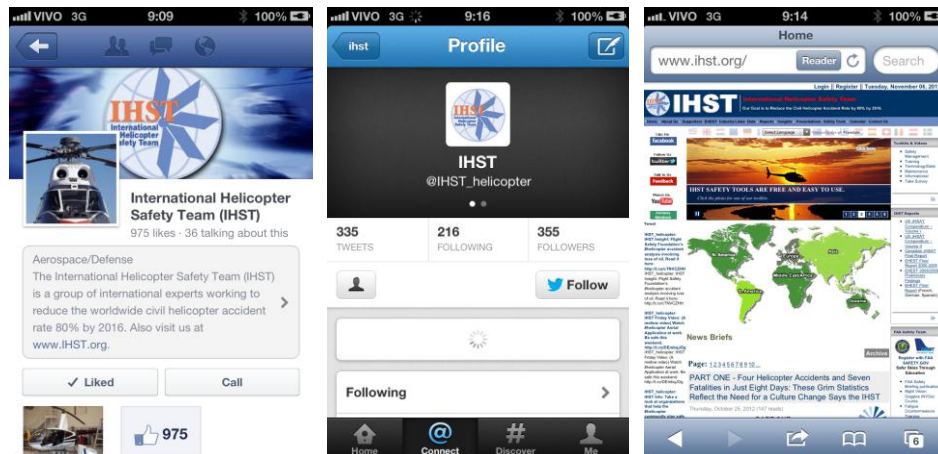


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## Sua Interação com o IHST



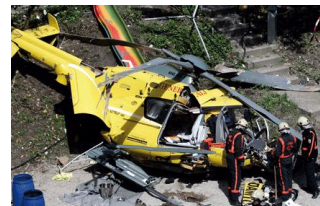
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## Resumo do que foi apresentado hoje:

- Iniciativa IHST - Introdução
- Atividades e Resultados do IHST Brasil
- Toolkits do IHST - Ferramentas
- Leaflets do EHEST
- IHST Self Risk Assessment Tool
- Como Interagir e Consultar



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**Reduzir a taxa de acidentes em 80% até 2016!**



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Bruno Villela - [bt.villela@gmail.com](mailto:bt.villela@gmail.com)

**Obrigada!**

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