



**UPDATE ON ACTIVITIES  
OF  
JHSAT (INDIA)**

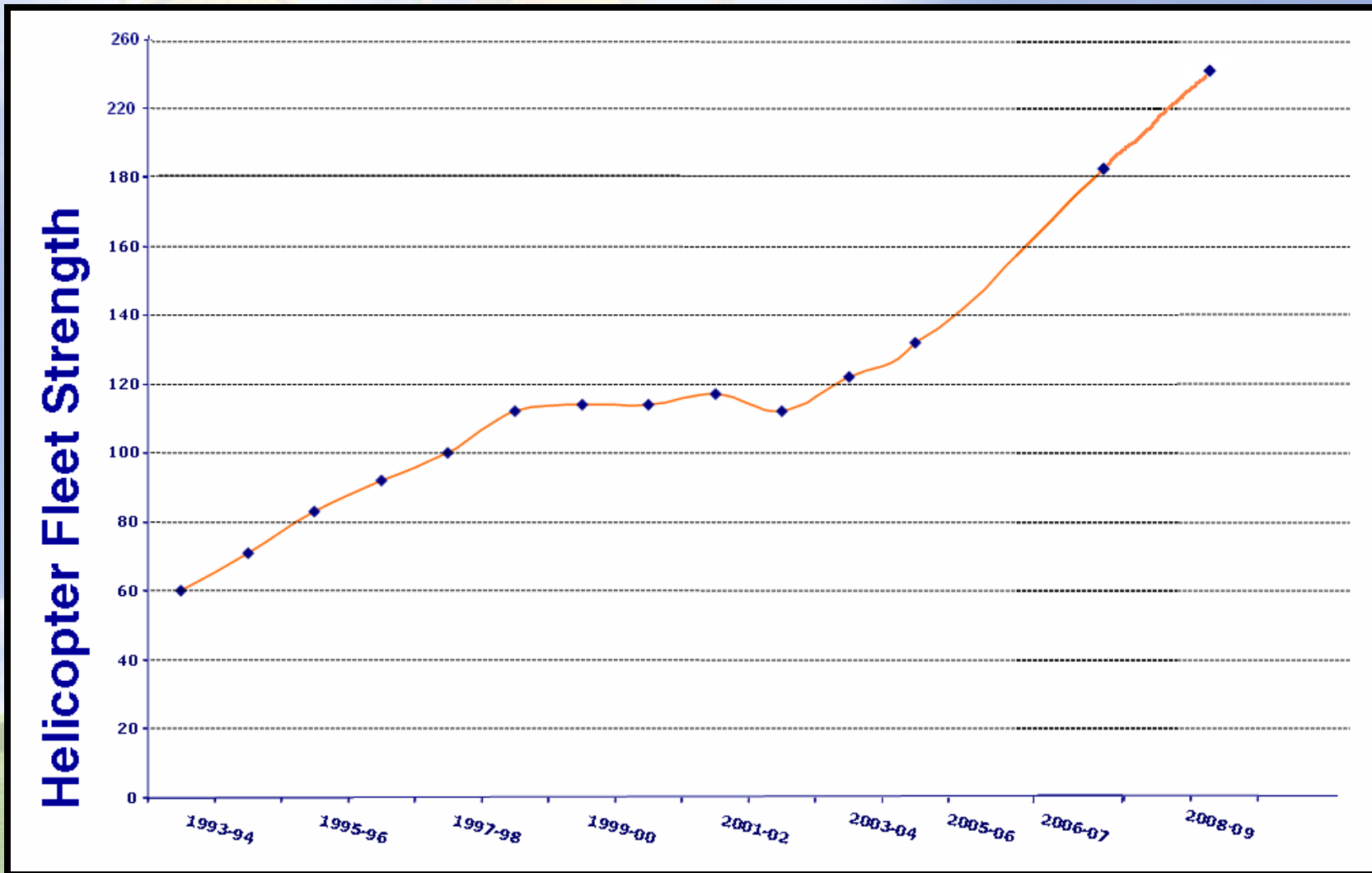


As per the Indological Knowledgebase, ancient epics covering events 7200 years back, mentioned about a VTOL vehicle that could fly in the air. It was known as Pushpakaviman. ***These machines never had an accident because they were operated by the mind power of the owner !***

# **PROFILE OF INDIAN ROTORCRAFT INDUSTRY**

- ❖ **The Indian Helicopter Scene is no different from the rest of the world.**
- ❖ **As the global demand for helicopters both for civil & military records a new high, the helicopter industry in India too is growing rapidly.**
- ❖ **There are around 250 civil registered helicopters and over 600 military Helicopters in use .**

# GROWTH OF CIVIL REGISTERED HELICOPTERS IN INDIA



# **PROFILE OF INDIAN ROTORCRAFT INDUSTRY**

- ❖ **Private Category (17 Operators); Fleet Strength (26)**
- ❖ **Commercial Operators (63 Operators); Fleet Strength (183)**
- ❖ **Govts. /Semi-Govt. (17 Operators) Fleet Strength (29)**
- ❖ **Para Military (1 Operator); Fleet Strength (8)**
- ❖ **Total : 98 Operators, 247 Turbine Helicopters**

# CHALLENGES IN OPERATIONS

- ❖ Extreme weather ( $-28^{\circ}\text{C}$  in winter in Himalayas to  $45^{\circ}\text{C}$  in summer in deserts) & Terrain Conditions.
- ❖ Lack of Infrastructure including:-
  - lack of real-time weather
  - lack of communications
- ❖ Fixed Wing Rules made applicable to Helicopter Operations
- ❖ Inadequate Pilot & Maintenance Training facilities
- ❖ Problems related to Organizational & Professional cultures

**Temperature range from  $-28^{\circ}\text{C}$  ( $-18.4^{\circ}\text{F}$ )  
in winter to  $33^{\circ}\text{C}$  ( $91.4^{\circ}\text{F}$ ) in summer**



**INDIGENOUSLY MANUFACTURED  
HELICOPTERS OPERATE REGULARLY  
AT HIGH ALTITUDES**

**DURING APRIL TO JUNE,  
TEMPERATURE OF RAJASTHAN  
HOVERS BETWEEN 32°C AND 45°C.**



# **HARSH CONDITIONS PREVAIL IN NEIGHBOURING NEPAL**



# **SAFETY DATA**

**Only a brief summary of investigation reports of accidents to civil helicopters are available on our Regulator's website (unlike NTSB which puts up detailed data on accidents).**

**It covers only limited causative factors (Pilot Error/Technical malfunction).**

**The Rotary Wing Society of India has therefore taken the initiative to analyze the safety data.**

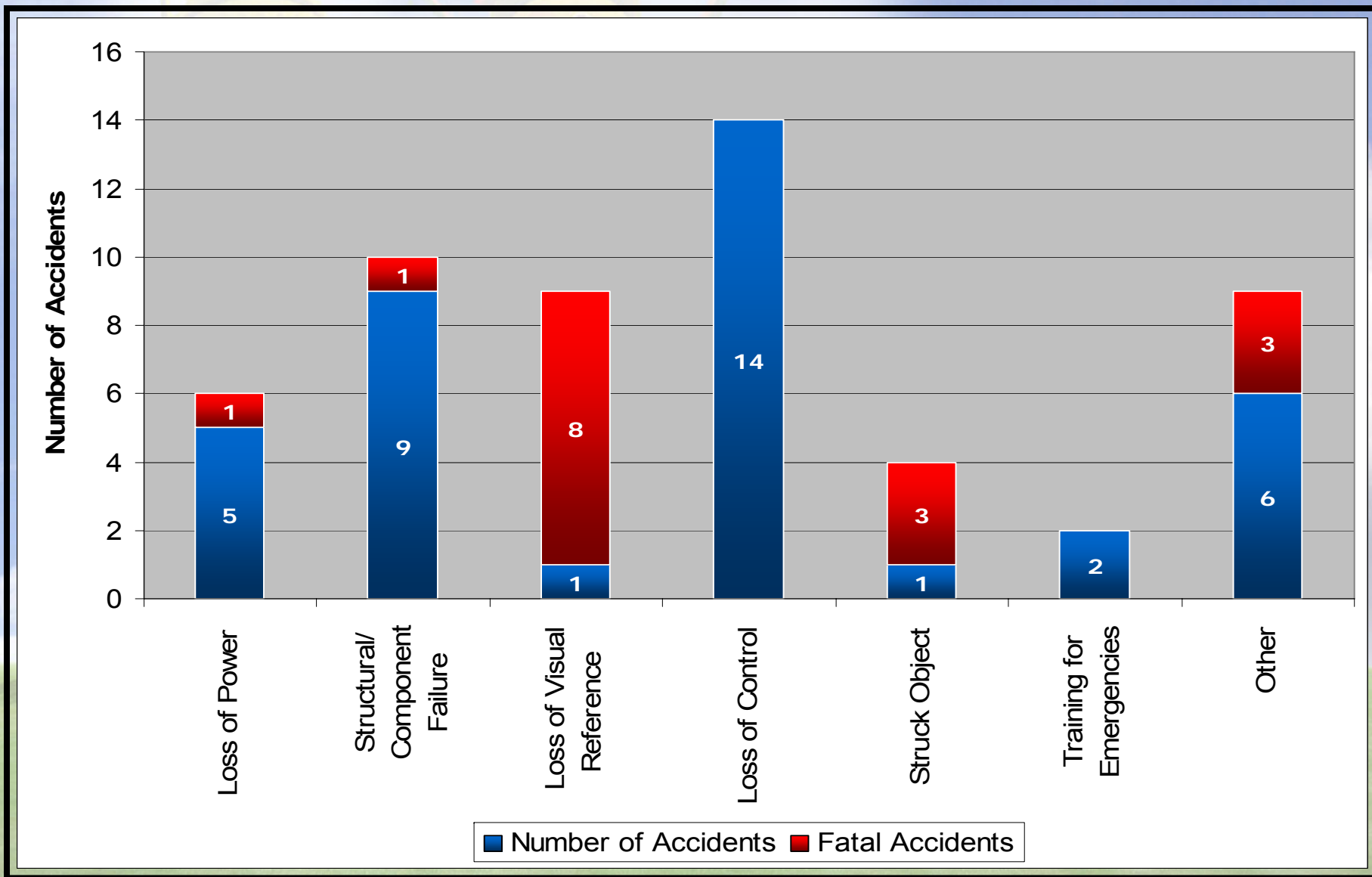
# SAFETY ANALYSIS

- ❖ Independent analysis of accidents to civil helicopters was started by RWSI around the time when IHSS 2005 was held.
- ❖ With limited resources, lot of work has been done to analyze causative factors related to 54 civil helicopter accidents since 1990 and develop safety action plans. Since the number of accidents were small, the analysis and mitigation strategies did not take much time.

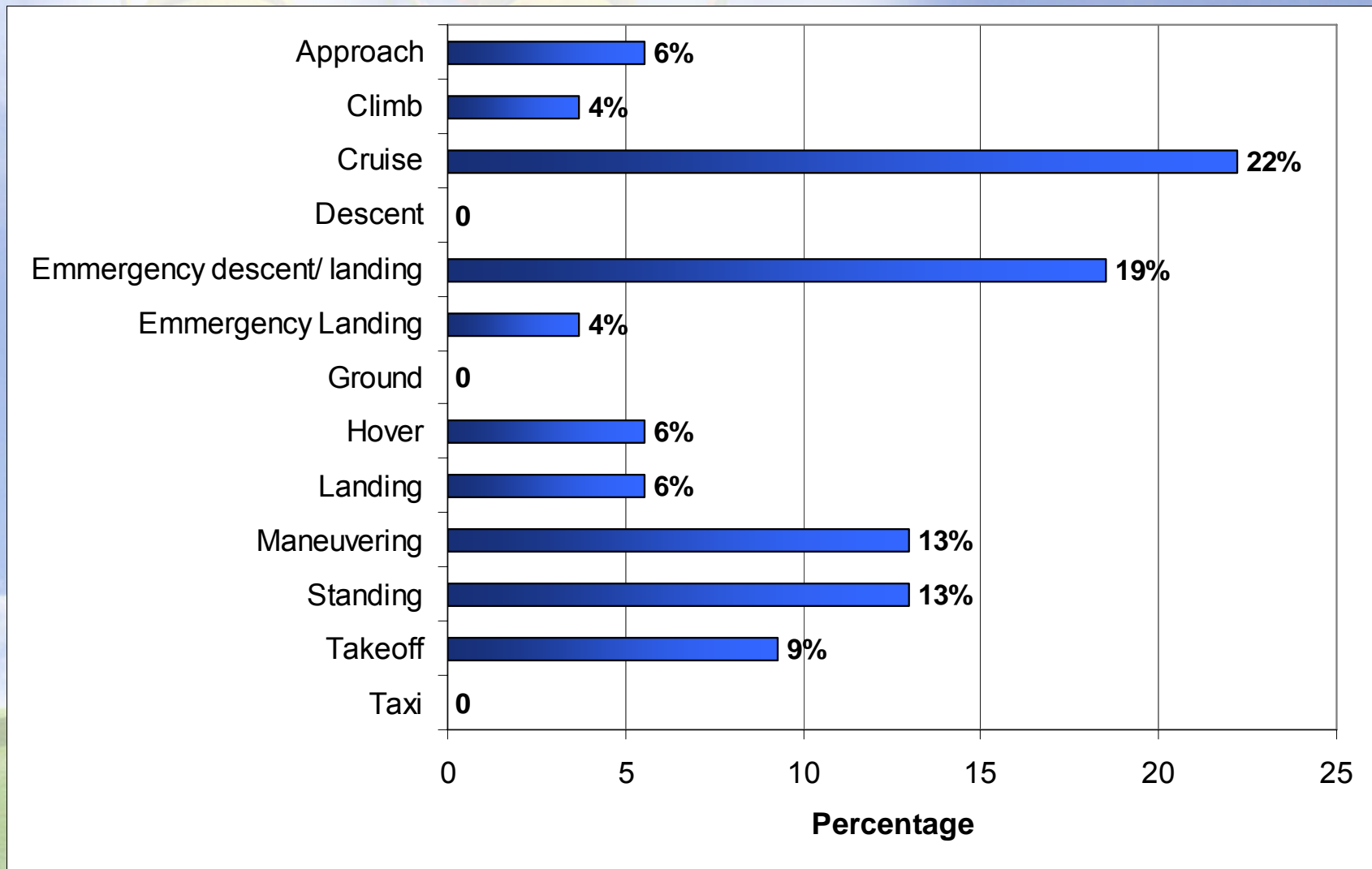
# ACCIDENT RATE TO CIVIL HELICOPTERS IN INDIA

- ❖ 1993-1999 :< 3 per 100,000 hrs of flying
- ❖ 1999-2005 :> 11 per 100,000 hrs of flying
- ❖ 2006-2007 :> 4 per 100,000 hrs of flying
- ❖ 2007-2008 :> 12.9 per 100,000 hrs of flying
- ❖ 2008-2009 :> 2.5 per 100,000 hours of flying
- ❖ 2009- 2010:> 1.6 per 100,000 hours of flying

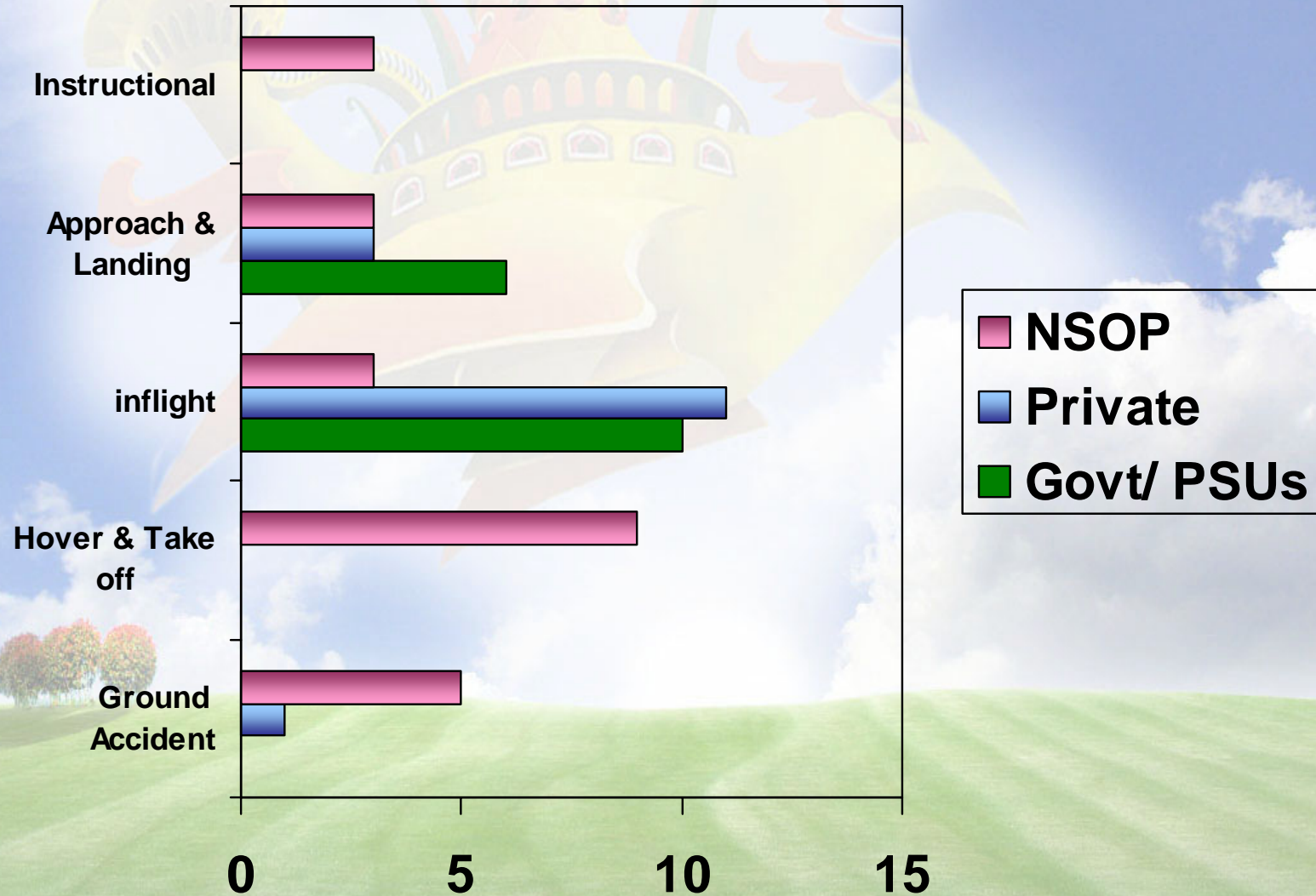
# HELICOPTER ACCIDENTS BY CATEGORY (1990-2008)



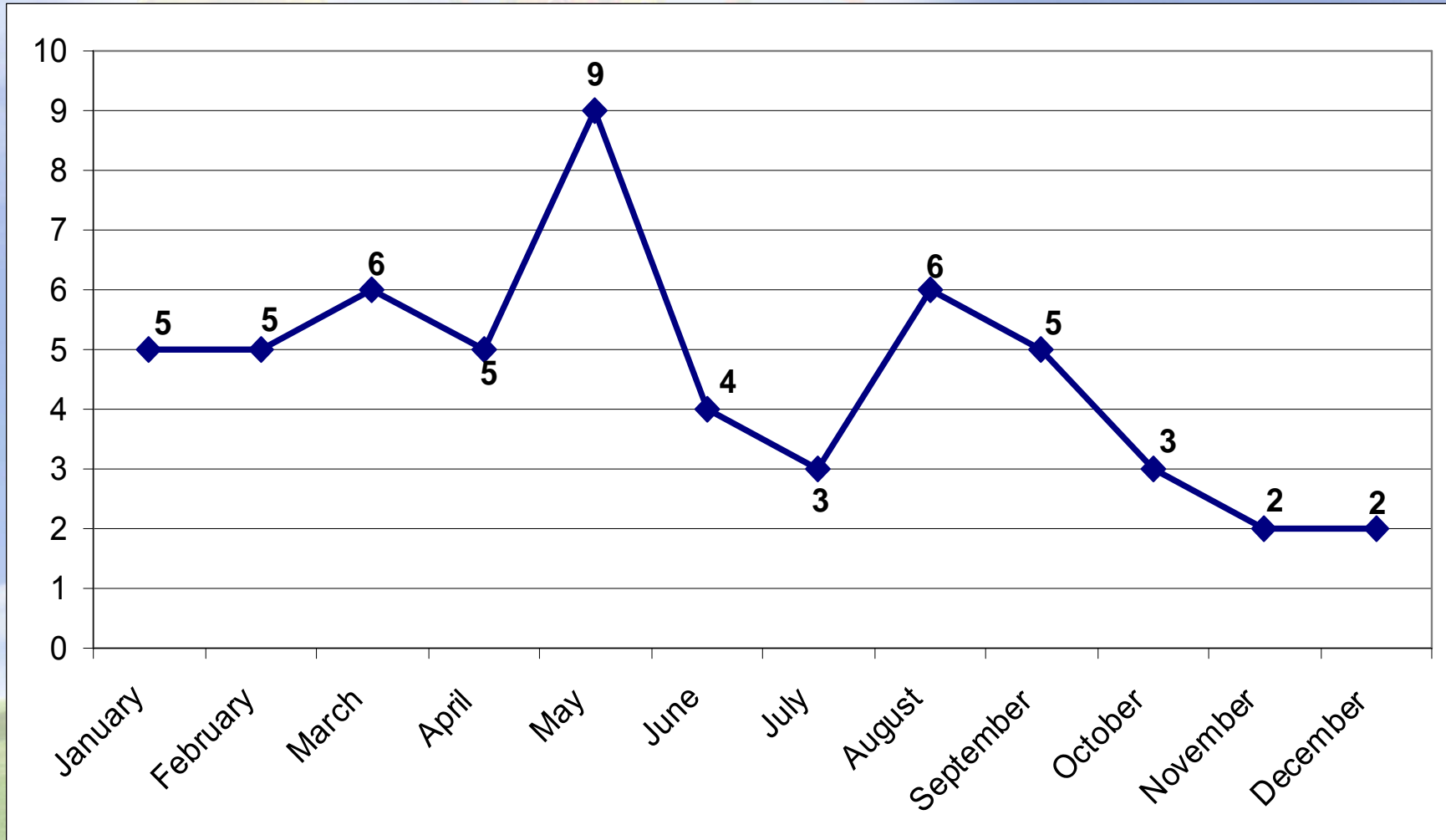
# ACCIDENT TO CIVIL HELICOPTERS (1990-2009) AT VARIOUS PHASES OF FLIGHT



# Accident During Various Phases of Flight



# HELICOPTER ACCIDENT MONTH WISE TREND ANALYSIS



# **ACTIVITIES PRIOR TO ISSUE OF JHSAT PROCESS GUIDELINES**

- ❖ **As the Regulator in India had already initiated number of mitigation strategies on the basis of RWSI accident analysis prior to establishing the JHSAT process in mar'07, these strategies were discussed at the IHST Regional Conference in Delhi during 12-13 Jun'06 and some recommendations were considered for Rule making.**
- ❖ **Stakeholders Meetings were also held to consider the recommendations. A set of mitigation strategies were evolved for immediate implementation by the Industry.**

# ACTIVITIES AFTER THE ISSUE OF JHSAT PROCESS GUIDELINES

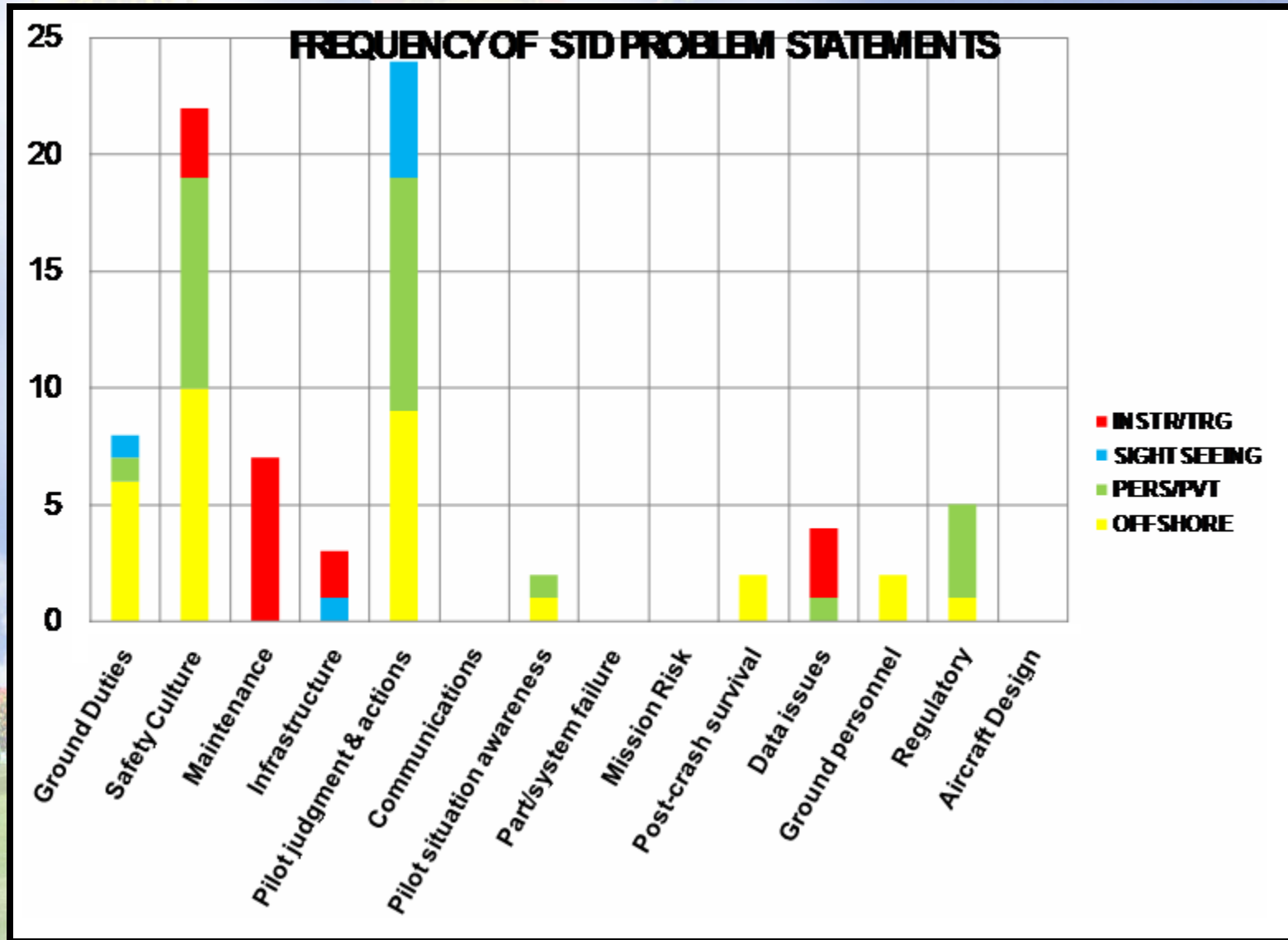
- ❖ JHSAT Process Guidelines were adapted in India after a workshop conducted by Mr. Mark Liptek during 25-26 Mar'07. By then, JHSAT (India) Team was established with safety experts from Regulator, operators, military and manufacturers.
- ❖ Further activity of JHSAT (India) was held up as it could not get the Investigation Reports related to accidents to civil registered helicopters from the Regulator to start the Analysis Process.
- ❖ Finally, the Regulator agreed to share with JHSAT (India) the official Accident Investigation Reports for the year 2003.

# ACTIVITIES AFTER THE ISSUE OF JHSAT PROCESS GUIDELINES

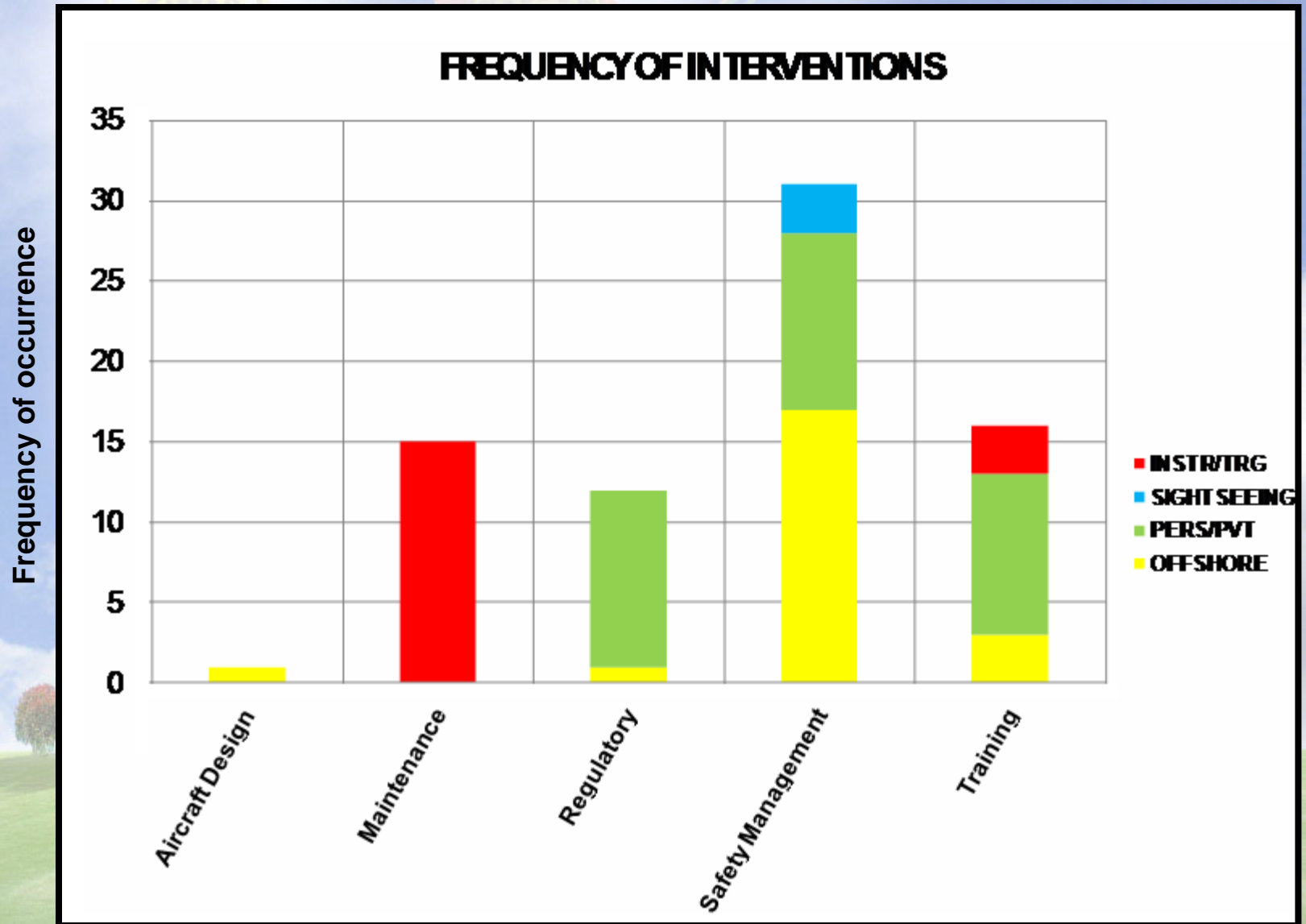
- ❖ During Feb'08 to Sep'08 JHSAT (India) analyzed the Investigation Reports to civil helicopters in the year 2003 by as per the JHSAT Process guidelines. There were in all seven helicopter accidents during 2003.
- ❖ Graphical representation on the frequency of standard problem statements & intervention strategies will be covered shortly.

# ROLE WISE PROBLEM FREQUENCY

Frequency of occurrence



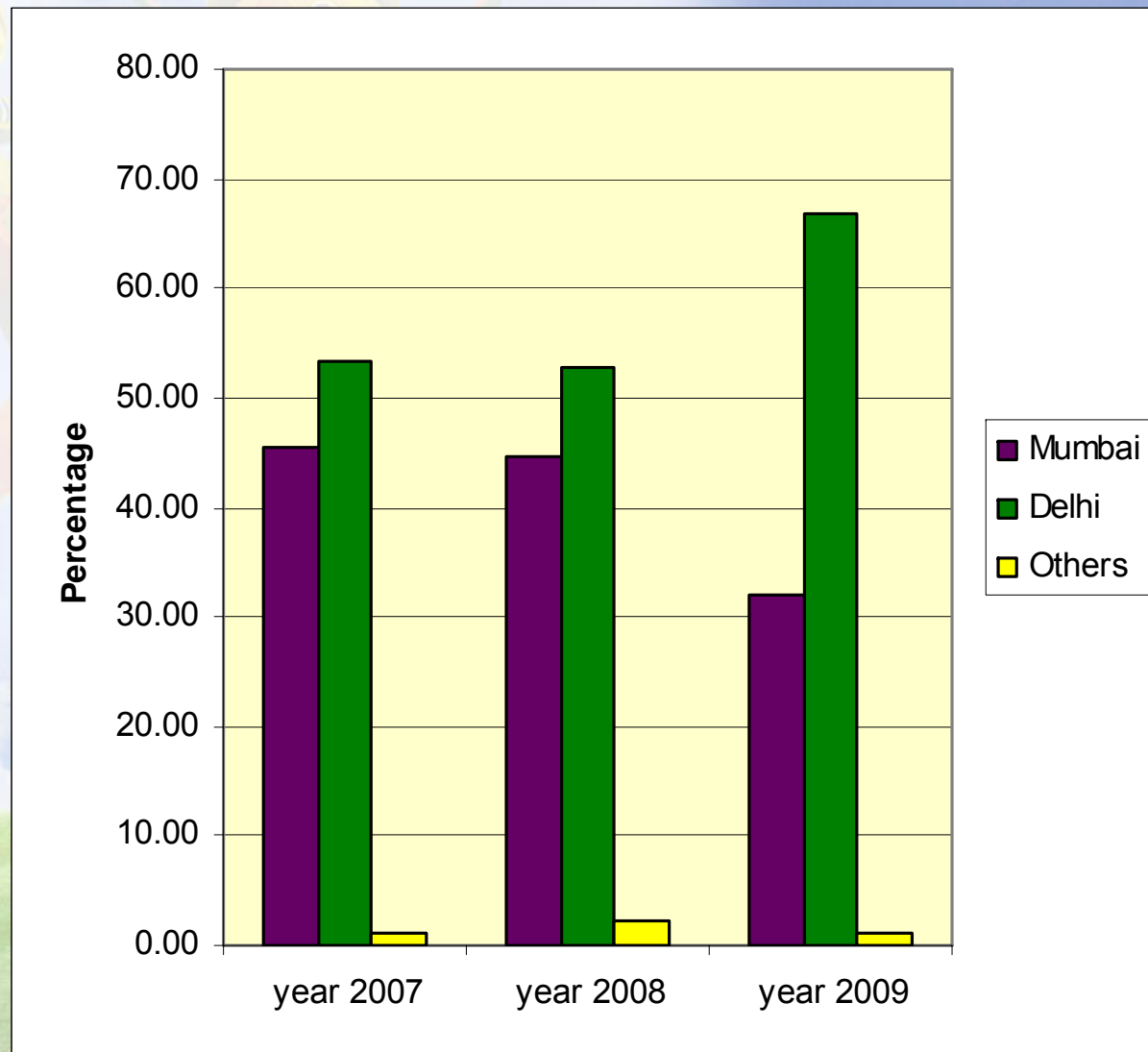
# GROUP WISE FREQUENCY OF INTERVENTION



# MAJOR INITIATIVE

- ❖ Based on the finding that SAFETY MANAGEMENT SYSTEM (SMS) could be a major mitigating strategy for arresting the high rate of accidents to Helicopters in India, RWSI has started conducting SMS capsules for the Industry at Delhi & Mumbai since August 2009.
- ❖ The Regulator too is keen to introduce SMS as a standard practice within the aviation community in India as a major safety initiative.

# Most Flying done in Mumbai & Delhi .



# MITIGATION STRATEGIES RECOMMENDED BY JHSAT(INDIA)

- To Review flight requirement standards and minimum requirements laid down in the op manual by the operators with a view to minimize risks.
- To Improve
  - SAFETY MANAGEMENT SYSTEM (SMS)
  - SOPS
  - Flight Ops Management
- To Enhance Safety awareness through Safety training and education at all levels.

# MITIGATION STRATEGIES RECOMMENDED BY JHSAT(INDIA)

## Offshore Operations

### Introduction

- Performance Class I to be introduced for all offshore helicopter flights
  - Periodical Audit of offshore equipment for Enhancing safety standards
  - HUET Training of all personnel
- ❖ Third Party safety audit done of off shore Rigs / Platforms periodically.
- ❖ To induct helicopter qualified professionals as ops managers to oversee compliance to the operating norms laid down especially for offshore op irrespective of the fleet size.

# MITIGATION STRATEGIES RECOMMENDED BY JHSAT(INDIA)

## Training (16 interventions in 5 accidents)

- To redefine Simulator-based training on the type used.
- To encourage use of synthetic, simulator-based training, especially for auto rotations.
- To introduce Special VFR Capsules for Instrument Rated pilots.
- To redefine Recurrent Trg to include CRM ,Emergencies and Accident Analysis for helicopter pilots.
- To have OEM designated instructors to carry out standardization flights with various pilots across the country.
- To introduce high quality basic training in IFR on IFR kitted helicopter at flying training institutions.

# MITIGATION STRATEGIES RECOMMENDED BY JHSAT(INDIA)

- ❖ Regulatory (12 Interventions in 2 Accidents)
- ❖ To increase vigilance over small operators through audit / surveillance checks.
- ❖ To address rule-breaking and establish a programme for voluntary reporting.
- ❖ Audit Processes to include
  - The Training Standards at OEM.
  - Proficiency monitoring checks and IR tests on pilots .
  - Proficiency monitoring checks on AME's with special emphasis on Maintenance.

# SAFETY INITIATIVES UNDER TAKEN

- ❖ **For preventing accidents caused due to loss of visual reference when pilots operating under VFR entered IMC (9 major accidents including 8 fatal accidents have occurred) ,RWSI has conducted 21 Spl VFR ground training capsules, and ground tests for 355 pilots unrated CHPL holders from Oct'04 to 11 Sep'09 at Mumbai, Delhi and Bangalore as empowered by CAR issued by DGCA on 06 Sep'04.**
- ❖ **There have been nil accidents due to this causative factor since October 2004.**

# SAFETY INITIATIVES UNDERTAKEN

- ❖ **Towards enhancing Safety Awareness**, RWSI has conducted 13 Recurrent Training courses inclusive of CRM, Emergency Handling & Accident Analysis since Jan'07 for over 404 pilots. The accident rate has shown a decline in 2008 & 2009.
- ❖ **Towards enhancing Safety Awareness of personnel of Exploration & Production Agencies deployed offshore**, RWSI conducts periodic interactive sessions on Health, Safety & Environment. It also follows up implementation of the recommendations of the participants by concerned authorities. RWSI also helps them with third party safety audit.

# **OTHER INITIATIVES BY RWSI TOWARDS ENHANCING SAFETY**

- ❖ **Capacity Building of Safety Auditors.**
- ❖ **Orientation Courses on Safety Norms for Offshore personnel.**
- ❖ **Recognition of Professional Excellence in Flight Safety.**
- ❖ **Distribution of safety posters on known hazards to operators.**
- ❖ **Distribution of Helicopter User's guide books to major users including politicians.**
- ❖ **Orientation courses of newly released military pilots.**

# COMPARATIVE CIVIL HELICOPTER SAFETY TRENDS

<b>Civil helicopters- estimated hours flown:</b>	<b>2007</b>	<b>2008</b>	<b>up to 01 Sep'09</b>
Total helicopter hours flown (in millions)	61994	80550	61267
<b>Number of civil helicopter accidents:</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Total number of civil helicopter accidents	8	2	1
Total number of fatal helicopter accidents	1	0	1
<b>Accident rate per 100,000 flying hours:</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Accident rate	12.9	2.5	1.6
Fatal accident rate	1.6	0	1.63

# **RECOMMENDATIONS FOR IHST**

- ❖ Since safety solutions are to be based on actual accident data, helicopter operators world wide must be encouraged to share actual hours flown with concerned JHSAT.**
- ❖ Regional workshops may be considered in the use of IHST Tool kits.**
- ❖ Encourage Helicopter Associations & Safety Institutions to share safety strategies by posting it in their website.**
- ❖ For achieving IHST objectives & sustaining it world wide, it should offer its expertise in setting up safety institutions where required.**



**CONCLUSION**



**ANY  
QUESTIONS**