CAAN Souvenir 2012

14th Anniversary
Civil Aviation Authority of Nepal (CAAN)
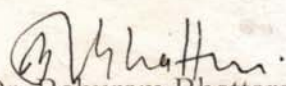31st December 2012

The Prime Minister

Message

I am delighted to learn that Civil Aviation Authority of Nepal (CAAN) is observing its fourteenth anniversary on 31st December 2012. On this auspicious occasion, I would like to extend my congratulation to CAAN and, on behalf of the Government of Nepal, I would also like to recognize its tremendous contributions to the nation.

It is evident that in the perspective of contemporary Nepal, in its elaborate process of national development, the scope and roll of civil aviation is getting to be vital. Civil aviation is, obviously, one of the basic infrastructures to link the country with outer world and to provide integrity, prosperity and permanency to the nation in its domestic sphere. It is the need of time that civil aviation in Nepal should accelerate its speed not only to meet the standard of comprehensive air transport activities but also to track the proper path of globally advanced aviation technology. In our own avionic scenario-- considering our own space of reality, needs and nature -- we are at the brink of time: customary and new. We are facing challenges to address the above situation correctly -- ensuring right technology and proper working patterns with harmony and competence together. I hope, Civil Aviation Authority of Nepal would be able to achieve its goal and to perform its duties efficiently and effectively.

I would like to express my genuine wishes for CAAN to be a bridge that could join us to the other end of our endeavor of building the nation.

24 December, 2012

Dr. Baburam Bhattarai

Message from the Minister of Culture, Tourism and Civil Aviation

It is a great pleasure for me to know that Civil Aviation Authority of Nepal (CAAN) is celebrating fourteenth anniversary of its establishment with various activities on 31st of December 2012. It is obvious that civil aviation has immense importance in Nepal—a landlocked, isolated country having with poor infrastructures and uneven hilly topography. It has a crucial importance for us, not only for the economic and tourism development of the country, but also-- and more vital than that-- it is a lifeline for a large number of populations. Realizing the fact above, the Government of Nepal is sincerely committed to develop civil aviation in Nepal by building, strengthening and revamping the needful aviation infrastructures, policy and working capacities. Civil Aviation Authority of Nepal is the sole agent of the Government of Nepal to materialize its thoughts into practices.

I hope, regulating and operating the air transport system with optimum efficiency and prompt regularity within the country and abroad, CAAN would be able to achieve the needs of the country related to the civil aviation and, by this, contribute pertinent essence of development to the nation.

I would like to congratulate CAAN for its successful completion of thirteen years in service and wish it all success in its endeavor.
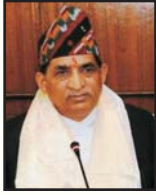
Post Bahadur Bogati
Minister
Culture, Tourism and Civil Aviation

Government of Nepal

MINISTRY OF CULTURE, TOURISM & CIVIL AVIATON

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Singhdurbar,
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Message from the Secretary of Ministry of Culture, Tourism and Civil Aviation

I am very pleased to learn that Civil Aviation Authority of Nepal (CAAN) has observing its fourteenth anniversary by completing its thirteen glorious years of services-- promoting and regulating safe and reliable air services in the country. On this auspicious juncture, I would like to extend my best congratulations to CAAN and wish that CAAN would be able to regulate prompt and efficient air services by strengthening national and international aviation security and safety standards to cherish objectives of a safe, secure and sustainable civil aviation in future as well. Since air transport has been an indispensable vehicle to integrate Nepal with outside world as well as the far -flung areas within the country, its significance in Nepal is pronounced by itself. On this valued occasion, may I extend the concern of the Government of Nepal which is dedicated to competitive development of tourism and civil aviation in the country, would always be with you for your appreciable endeavours to nurture and strengthen the domain of civil aviation.

I wish CAAN all the success in its endeavors.

Yajna Prasad Gautam
Secretary
Ministry of Culture, Tourism and Civil Aviation

ICAO · OACI · ИКАО

| International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织 |

Message

It gives me much pleasure to extend my sincere congratulations to the Civil Aviation Authority of Nepal on the occasion of its fourteenth anniversary on 31 December 2012.

CAAN as part of the civil aviation community certainly plays an important role in fostering the safe, secure and sustainable air transport. I look forward to the strong commitment and continued contribution of CAAN to make civil aviation the Reliable Connection to the World.

I take this opportunity to express my warm wishes and assurance for the continued and full cooperation at all times from the ICAO Regional Office for Asia and Pacific.

Yours sincerely,

Mokhtar A. Awan
Regional Director

Ref. E1/23 : AP-RD 0091/12

CIVIL AVIATION AUTHORITY OF NEPAL

Head Office, Babar Mahal, Kathmandu, Nepal.

Ref. No. :   Date:

Message from Director General of CAAN

Civil Aviation Authority of Nepal has completed thirteen years of its services successfully and celebrating its fourteenth anniversary on 31st December 2012. On this auspicious occasion, on behalf of CAAN, it is my pleasure and privilege to extend my sincere felicitations and warm greetings to all our stakeholders. It is evident that air transport is an important means for sustainable socio-economic development of the country. In the mountainous country like Nepal, where there are still several locations which are not linked by road, air service is the only means of transportation. So in other countries, though air transport may be considered as luxury, in case of Nepal it is the compulsion of the people.

Civil Aviation Authority had dual role both as the regulator of the civil aviation sector as well as the service provider (the airport operator and ANS service provider). Very recently, CAAN has changed and implemented new organizational structure with clear cut functional distinction between these two functions. It is expected that the new organizational structure will make CAAN more effective in fulfilling its primary functions.

CAAN has been constantly contributing to the development of air transport in Nepal and serving as critical infrastructure for the development and promotion of tourism. It is responsible to implement the national civil aviation policy and as a contracting state of ICAO, fully committed adhering to ICAO principles: the Convention and Annexes.

I would once again like to express my sincere thanks and gratitude to all our stakeholders, patrons and well wishers for their continued support.

Tri Ratna Manandhar

Director General

Editorial Notes

Thirteen glorious years of aviation services have passed in Nepal since the establishment of Civil Aviation Authority of Nepal in 1998. We are observing the 14th anniversary of CAAN on 31st of December 2012 to commemorate the day of its establishment. This is the day to recall and evaluate the past that we travelled within the period of thirteen years.
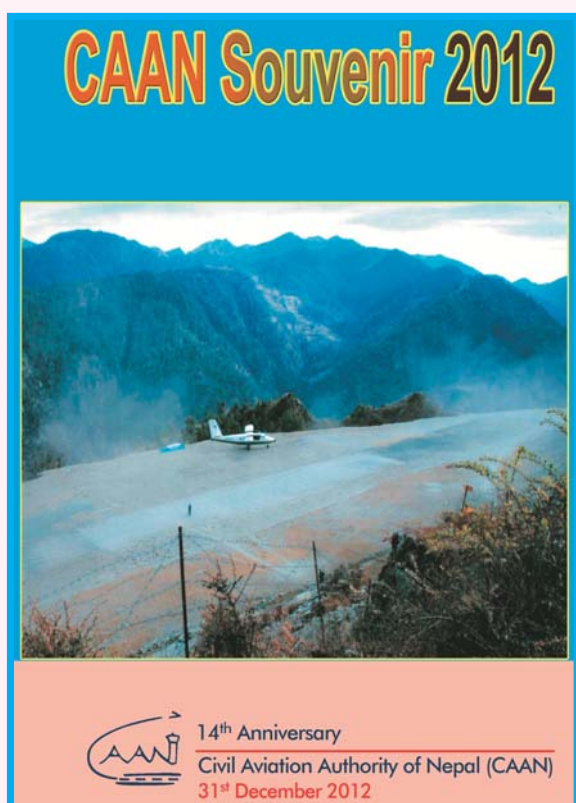
The story of Civil Aviation Authority of Nepal, CAAN, is not bad – although problems and challenges were there for us to deal with. We have tried our best in the mission of assimilating ourselves into the spirit of globalized modern Civil Aviation. For this, the passion of Nepalese Civil Aviation must be awoken and driven it restlessly in function : as if driven by some unseen divine soul of creation, as if being sting with gad-fly, the spirit of civil aviation, --- such as drove IO, the mythic character in mythological Greek story of Prometheus. Since the new challenges of civil aviation are pilling up in front of us , it was high-time we should be awoken and be aware of our positions along with its actual length and breadth. Aviation, as a subject of motion, always needs to achieve ' a new', and go a little further ahead, relentlessly and continuously, ---- Charaibeti, Charaibeti, what the Veda says for such efforts. We want synchronizing us with the global pace of civil aviation, we want our tools to be working effectively, we want our skills to be used appropriately, we want our honesty and labor to be addressed properly--as it is required by the book.

Reminding once again the prime goal of CAAN, safe, efficient and prompt growth of civil aviation in Nepal, on the eve of this fourteenth anniversary of CAAN, we would like to appeal you all to contribute something positive from your respective capacity and space to fulfill the prime goals of CAAN above. On behalf of the Publication Committee of this 'Fourteenth Anniversary CAAN Souvenir' I would like to extend our sincere thanks to the honorable dignities, writers , valued contributors as well as all other concerns for their valuable supports to this souvenir; it is a common effort that makes this souvenir a success and develop it as a common forum of aviation literature. On the propitious occasion of new year 2013, may the new year brings you all your heart desire, may our sky be safe, open and wide for the development of our civil aviation in future as well.

Dr. Bimal kumar Subedi
Chief Editor

CAAN Souvenir 2012

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Civil Aviation Authority of Nepal (CAAN)
31st December 2012

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Foreword

It is my pleasure and privilege to present CAAN Souvenir, an aviation journal, published to mark the 14th Anniversary of the establishment of Civil Aviation Authority of Nepal.

CAAN has travelled a long journey since its establishment in 1998. During this period, we have made a significant progress in the areas of air transport development, airport infrastructure and air navigation facilities. Domestic and international air traffic movement has witnessed tremendous growth during the period. To cope with the ever increasing aviation activities, CAAN has initiated significant steps to ensure the safe and sustainable air transport operations. Tribhuvan International Airport (TIA) has been certified as per the requirements and guidelines of ICAO. The recent introduction of RNP-AR approach and installation of Automated Message Handling System (AMHS) signifies as a major breakthrough to facilitate the safe operations of international carriers at Tribhuvan International Airport. Under domestic airport development programme, runway pavement works have already been completed at three domestic airports namely: Tumlingtar, Simikot and Manang. Ten more other domestic airports are in the process of runway pavement and upgrading work.

CAAN has given high priority to address the findings made during the Universal Safety Oversight Audit (USOAP) of Nepal carried out ICAO in May, 2009. Most of the findings made by the USOAP-Audit have been resolved with the help of time bound Corrective Action Plans (CAPs), and

it has already been accepted by ICAO. Introduction of State Safety Programme (SSP) to establish the Acceptable Level of Safety (ALoS) in civil aviation is an achievement in terms of our commitment to the ICAO SARPs. A high level National Aviation Safety Team (NAST) has been formed to deal with safety issues in a coordinated approach for the effective implementation of SSP. Safety Management (SMA) has already been introduced in certified aerodromes and aircraft operations. New Air Operator Certificate Requirements (AOCR) in line with ICAO provisions has already been enforced by CAAN. In consultation with concerned stakeholders, CAAN has prepared first draft amendment to the Civil Aviation Regulation, 2002 and forwarded it for the government approval. This amendment incorporates most of the provisions required for the certification and oversight of airline operators and air navigation services.

As a member of COSCAP-South Asia, CAA Nepal is being benefitted through the COSCAP Programme in the areas of strengthening the Safety oversight capabilities, effective implementation of SARPs, harmonization of safety documentation and human resource development. Regional Experts in the areas of Airworthiness, Flight Operations, Aerodromes and Air Navigation Services have been providing their expert services to Nepal on scheduled basis. CAAN is continuously participating in SARI Project initiated by the EASA for the harmonization of safety regulation

Tri Ratna Manandhar
Director General, CAAN

among the States of South Asia. In line with the EASA regulations, CAAN has harmonized NCAR provisions for maintenance organization, maintenance personnel licensing, maintenance training organization and continuous airworthiness requirements. CAAN has already re-structured its organization making functional separation between regulatory and service provider provisions within the organization. Civil Aviation Capacity Enhancement Project with the loan assistance of ADB is working for restructuring of Civil Aviation System, development of required legislative framework, operating regulations, corporate and human resource plan for new organizations.

A high level Task Force formed by CAAN board is working with a view to attracting, hiring and retaining qualified technical manpower, specifically in the area of airworthiness and flight operations.

With these few remarks, I would like to extend my sincere thanks to all the writers for contributing their valuable articles to this publication. I also extend my appreciation to the members of publication team for their hard work to bring this publication.

Preparedness in the prevention of spread of Communicable Disease through Air Travel

Dinesh Prasad Shrestha
Dy. Director General, CAAN

Introduction

Being a signatory of Chicago convention, Nepal is obliged to implement ICAO requirements, Standards and Recommended Practices (SARPs) dealing with the public health and the matters related to safety, regularity and efficiency of international Air navigation. The implementation of ICAO SARPs through the issuance of ICAO Annexes is the mandatory provision for the States.

Recently in December 10-12, 2012 Civil Aviation Authority of Nepal organized a program on awareness of Public Health Emergencies (PHE) preparedness plan which was assisted by ICAO Cooperative Arrangement for the prevention of spread of Communicable Disease through Air Travel (CAPSCA) Assistance Visit Team. The one day awareness programme on Public Health Emergencies (PHE) preparedness plan was attended by representative from Ministry of Culture, Tourism and Civil Aviation, Ministry of Health and Population, Immigration, Customs, Civil Aviation Authority of Nepal (TIA Aerodrome Operations, Facilitations, ANS Operations and Flight Safety), Medical Institutions, Airport Security Police, Nepal Army Aircraft Service, and BARN and AOAN including Qatar and Nepal Airlines.

The Assistance visit team presented the need of PHE preparedness plan between Civil Aviation and National Public Health Agencies and highlighted need to promote and facilitate communication, cooperation, coordination & collaboration between the civil aviation and public health sectors with the main objective to provide awareness training on ICAO and WHO Public Health Emergencies requirements for the aviation sector. It was also to evaluate existing PHE provisions in the aviation system and assist States by providing necessary advice.

Plan and Procedures for PHE in the Aviation Sectors
ICAO Provisions:

Article 14 of the Chicago Convention states that each contracting state agrees to take effective measure to prevent the spread of communicable diseases such as Cholera, Typhoid, Small Pox, Yellow Fever, Plague and such other communicable diseases by means of air navigation as the contracting states shall from time to time decide to choose. In the past, there were several initiatives by ICAO as per the provision of Article 14 of the Convention in coordination with WHO and concerned Governments with regards to public health. ICAO has prescribed the provisions of Public Health issues through various SARPs in ICAO Annexes 6, 9, 11, 14 and 18 including ICAO PANS ATM Doc 4444. The provisions of the SARPs are mandatory and subject to ICAO USOAP Audit including the Continuous Monitoring Approach.

Regarding the other communicable diseases, the SARS (Severe Acute Respiratory Syndrome) pandemic back in 2003 was brought down efficiently by the world community mainly by global coordination and cooperation of ICAO, WHO and Aviation communities. Similarly, the concern brought about by Aviation Influenza (H1 N1 Virus) in 2009 referred as Swine Flu and the H1 N5 (Bird Flu) aviation Influenza were suppressed by the global communication cooperation, collaboration and coordination of International Civil Aviation and Governments concerned.

WHO Provisions:

International Heath Regulation (IHR) 2005 which came into force in 15 June 2007 is legally binding the World's countries that have agreed to follow the same rules to secure the international health. The purpose of IHR is to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.

With a public health emergency of international concern like a passenger falling sick with suspected infectious disease inside the airport, what would be expected of the state Public Health Authority, Civil Aviation Authority, the airport, the airline and other stakeholders? To answer the question, WHO IHR core and emergency requirements and the responsibilities of the various stakeholders are to be prescribed in the PHE Preparedness Plan beforehand.

National Public Health Emergency/Contingency Plan of the Government of Nepal

In the context of Government of Nepal, Nepal is fully complying with the WHO IHR but there is no plan prepared in coordination and cooperation with Civil Aviation Authority for the prevention of communicable diseases through air travel. Nepal health sector emergency response and disaster response plan is the document for dealing with emergencies and disasters in Nepal. Similarly, 'Nepal Influenza Pandemic Preparedness and Response Plan' was developed to focus on the Aviation Influenza and social mobilization issues in infection control. This plan is also not addressing the preparedness for the control of communicable diseases thorough air travel.

National Aviation Regulations and CAAN Preparedness

Civil Aviation Authority of Nepal has the obligation to adopt the ICAO SARPs. As per Civil Aviation Authority Act 2053 Clause 34 Civil Aviation Facilitation Rules 2008 has been formulated which clearly describes the provision of quarantine and health facilities for the general public in the International Airport. CAAN has also

made the provisions of adequate and assessable medical supplies to be onboard the aircraft in Flight Operations Requirements as per Annex 6. Similarly, Rodents and Pest Control Guidance Material is prescribed in NCAR 2009, ATS Authorities shall develop and promulgate contingency plan as per Annex 11 and Aerodrome Emergency Planning as per the provision in Annex 14.

Tribhuwan International Airport is the only gateway to Nepal for international public travelling by air and the facilities provided for the travelling public in the International Airport has great significance in terms of spread of communicable diseases.

The Airport Emergency Plan has the provision of medical help and medical facilities. CAAN has an agreement with KMCTH on the first hand emergency medical assistance and with other Hospitals as required. Emergency operation center (EOC) located at TIA is activated as and when required.

Airlines Preparedness

Communicable diseases may be transmitted to other travelers during air travel; therefore, people who are acutely ill, or still within the infectious period for a specific disease, should be discouraged from traveling. Travelers should also be reminded to cover their noses and mouths when coughing or sneezing.

Travelers get sick as a direct result of air travel; it may be due to close proximity to other passengers with certain communicable diseases or by spraying of airplane cabins with insecticides (disinfectant). Although flight attendants receive training in basic first aid procedures, they are generally not certified in emergency medical response. Managing in-flight medical emergencies is to stabilize the passenger until appropriate ground-based medical care can safely be reached. In this circumstance, consideration should be given to choosing an airport that has timely access to an appropriate medical facility.

If a passenger with a communicable disease is identified as having flown on a particular flight, passengers who may have been exposed may be contacted by public health authorities for possible screening. To assist in this process, travelers have to provide airlines with current contact information. Because of the increasing ease and affordability of air travel and mobility of people, airborne, food-borne, and other infectious diseases transmitted during commercial air travel are the important public health issues.

Conclusion

Spread of communicable disease through air travel is an issue already recognized by WHO, ICAO and World Aviation Communities which is to be addressed in communication, cooperation, collaboration and coordination of the National Public Health Authority and Civil Aviation Authority mainly as per the guidelines of ICAO and WHO. The need of the hour is to prepare and implement National PHE Preparedness Plan so as to insure the compliance, capabilities and preparedness in the case of Pandemic Outbreak of any International Public Health concern.

Airplanes parking at TIA.

Civil Aviation Academy: A Roadmap for Transformation

1. Background

Civil Aviation Academy (CAA) has come a long way since its establishment well back in 1975. A career of almost a four decade, this Academy is an aviation training organization approved by the Civil aviation Authority of Nepal (CAAN), and boasts of navigating the civil aviation training in Nepal by producing skilled manpower through around 5 dozen courses ranging from basic to refresher and advanced packages with its vibrant Faculties -- Air traffic Services, Engineering, Aviation Security, and Rescue and Fire Fighting. With the addition of new divisions like TRAINAIR Division, Flight Safety Training Division, Course Development Division and Quality Assurance Division, the upcoming activities are expected to expand more visibly in days to come. CAA is geared to create a new pathway to cope with the mounting challenges and harnessing the flourishing opportunities emerging in every domain of air transport. This is true especially in the context of the rapid technological transformations taking place in the contemporary world of aviation and the similar clout of traffic rise in present times in this part of the globe and in the entire Asia-Pacific regions. CAA envisions that the pathway would lead to an internationally recognized academy of excellence in the development of quality human resources at national and regional level. With its typical, conventional faculties dedicated to producing skilled human capitals in the areas of air traffic control, Aviation Security, Engineering and Rescue and Fire Fighting, CAA sees it a challenge to create new pathways for addressing future aviation needs while being a competent academy in respect of quality, recognition and sustainability. There are some recent visible development indicators with CAA that provide many opportunities on the one hand while daunting challenges for CAA towards transformation on the other. To cope with multifarious challenges with the existing conventional ventures a new roadmap is deemed inevitable for its metamorphosis.

2. TRAINAIR Plus

In tandem with ICAO's call for a uniform and single voice from training centers all over the world, Nepal strived for membership in the TRAINAIR Plus programme following satisfactory capability assessment of CAA by ICAO in 2011. With the establishment of a Course Development Unit (CDU) and preparation of a Standardized Training Package (STP) under a TRAINAIR Plus Project (NEP/09/803), CAA has, on 1 April 2012, been awarded a TRAINAIR Plus Associate Member Certificate.

Currently, CAA is in process of becoming a full-fledged TRAINAIR Plus member for which CAA needs to develop and get validated a new STP. CAA has initiated the development of STP on "Basic AMHS Course for Aviation Personnel" with the involvement of two TRAINAIR Plus course developers and three Subject Matter Experts under the oversight and directive of Chief of CAA. This is the beginning of a time for CAA in developing and sharing valuable course materials needed to meet the present and future challenges of aviation community. The TRAINAIR PLUS programme goal is to improve the safety and efficiency of air transport through the establishment, maintenance and monitoring of high standards of training and competency of aviation personnel on a world-wide basis and in a cost-effective manner. To achieve this goal, the TRAINAIR Plus programme uses two tools: a methodology to develop standardized courses in civil aviation disciplines and a sharing system of Standardized Training Packages (STPs). The Aviation Safety Training (AST) Section of the Air Navigation Bureau is responsible for the management of the TRAINAIR PLUS Programme.

3. The 5 Year Strategic Plan

One of the major initiatives taken by CAA is its development of a 5 year strategic plan (2012/2013 – 2016/2017), which is to be submitted to DGCA for approval. The Plan takes into account two major spirits: Next Generation Aviation

Mahendra S. Rawal
Chief, Civil Aviation Academy

Professionals and TRAINAIR Plus Programme as initiated by ICAO. Civil Aviation Academy of Nepal (CAA) considers that all the components of its organization are an organic whole to add to the integrity of the training system. The 5 Year Strategic Plan of Civil Aviation Academy combines all the elements that support the development, institutionalization and maintenance of training in civil aviation. Since training is central to this end, the strategic plan employs a holistic approach. Therefore the strategies with regard to organizational overview, administration, finance, manpower, instructional set up, course development, curriculum, trainer's training, international participation, corporate affairs, logistics, IT, facilities, international linkage, and equipment maintenance, in particular, will be oriented to training development, training delivery and to the wash-back for continuous quality assurance. Opportunities identified in the Plan are as follows:

- Increasing training demands with emerging aviation activities (airline business, and manpower development): positive impact on safety, revenue earning
- Human resources development need for upcoming local, regional/ international and second international airport of Nepal
- TRAINAIR Plus Associate membership to CAA has opened door for STP development, and up gradation of existing courses for international sharing
- Future prospect of EU-Asia Regional civil aviation training center establishment in Nepal

- Prospects of industry-University collaboration for operating academic program: Academic degree
- Positive perception towards CAA in the market.
- Future N-gap training opportunities
- People's interest in competency based training
- Strong pool of disciplinary experts in the market
- Increased tourism and manpower development activities
- New ICAO requirements for safety of aviation operations
- TRAINAIR PLUS related International training development activities (training manager workshop, course developers' training, global symposia, and ICAO Next-Generation Aviation Professional conference, TRAINAIR Plus Regional Conference) for CAA's participation and exposure.
- Upcoming Pokhara, Goutam Buddha as regional air-ports and SIA at Nijgadh (Needing trained ATS officers and other technical personnel)

4. Recent Developments

The new organization structure of CAA provides three new incorporations: TRAINAIR Division, Quality Assurance Department and Flight Safety Training Department. This is considered a step forward towards providing qualitative and expansive aviation technical training. In addition to that, a comprehensive Aviation English Training and Testing Programme has been developed for Civil Aviation Academy (CAA) Nepal to strengthen its efforts made and initiatives taken in responding to the structured implementation of ICAO Language Proficiency Requirements (ICAO Manual 9835) as stipulated in the Procedures for Personnel Licensing Requirements enforced by Civil Aviation Authority of Nepal (CAAN). Likewise, CAA is conducting a new basic ATC licensing - - Aerodrome Control course in near future as early as possible for which preparation is in rigorous process. In similar vein, pre-training administrative activities are being vigorously pursued in respect of conduction of a Basic Aerodrome Firemanship Course in near future. In response to the anticipated need, a computer based aviation security screening lab has been set up with the installation of necessary apparatus at CAA, which is also expected to be brought to operation for sophisticated training

soon. This high-tech facility will enable the trainee users (particularly the security police) to generate and augment competency among themselves (the security police) in X-Rayed screening of baggage through identification of permissible and non-permissible items with more clarity, precision and accuracy. With support and active involvement of our staff and other personnel, and in prudent appreciation of the intent of CAA by CAAN Board of Directors, a Civil Aviation Sports Club has been established in CAA premises with a view to create and augment healthy mind, body and spirit, thereby generating kinship and harmony among aviation personnel across the organization and industry.

5. Challenges

Despite the strengths in training delivery and infrastructure, the minimum enabling conditions make it difficult for CAA to cope with increasing demands for quality and competence. It is no less short-fall free. Threats, too, are also looming large. The task of making CAA self-sustained and truly academic still remains arduous. CAA identifies some of the threats as follows:

- Political interference and instability
- Government policy: CAA not visibly recognized
- Growing competitors in the market due to private sector growth in aviation
- Weak public infrastructure like utilities, transport, security and so forth
- Limited autonomy with unwanted interference

There are many challenges facing training in aviation. General identifications are given by the fact that we have been realizing increasing pressure on aviation professionals due to fast aviation expansion, competition, and constant changes in the aviation industry. Standardization of training against the scenario of aviation activities being carried out by multi-cultural workforce internationally stands out as a major challenge to ensure single voice from all training centers. There is no denying that while training is the only enabler for the development of competence, contributing to the development of individuals. The challenges facing CAA also emerge out of weaknesses as bulleted below:

- Inadequacy of required infrastructure (Class rooms, staff rooms, canteen, toilets)

- Obsolete and inadequate facilities
- Conventional training curricula and instructors based training delivery
- Lack of trainers' skill development (Especially the recent content) plan
- Traditional administrative and accounting system
- Slow pace of technological adoption and adaptation (Adapting in accordance with the technology)
- Absence of quality assurance system/mechanism
- No research and development activities
- Low morale among faculties
- Indeterminate placement, transfer and retention
- Incapable of harnessing emerging demand with low marketing endeavour e.g. Cabin/flight attendant training

At a higher organizational and international level the challenges are

- Difficulty in establishing a process to collect and evaluate post training programmes
- Conducting impact studies to show the actual value of learning experiences
- Assess the subsequent return on investment
- Training and development specialists becoming performance improvement specialists
- Difficulty in building partnerships with key clients and management groups
- Getting feedback from operational level
- Accessing and using the technology, by addressing cost and funding issues
- Difficulty in exercising directive, decisive, authoritative, and autonomous functions for methodical, logical and rational solutions

TRAINAIR Plus and STP development:

TRAINAIR Plus Operational guidelines stipulates that the associate member will have to pay US$ 15000 every year plus assessment fees every three years, whereas the annual fees for TRAINAIR Plus member is US $ 10,000. While cost recovery and constant immersion of course developers stands out as a major challenge as this cost outnumbers marginal revenue collected through paid courses. A very innovative funding support mechanism can only ensure consistent attachment with the Programme. A high level intervention is required to see CAA self sustained in future.

NGAP

The ICAO Next Generation Aviation Professionals (NGAP) initiative launched by ICAO in 2009 has revealed that within ten years of time, over 200,000 pilots and 400,000 skilled maintenance personnel will be in short fall for global commercial aviation. In the Asia-Pacific Region alone, air travel is expected to grow at 6.5 per cent over the next 20 years which simply indicates that the need of aviation professionals is huge. The NGAP initiative is to ensure that enough qualified and competent aviation professionals are available to operate, manage and maintain the future international air transport system. Although ICAO's concern is in respect of foreseeable shortage of pilots, aircraft maintenance personnel, air traffic controllers, CAA per se appears to be impacted by similar analogy in respect of course developers, training managers and other trained faculties in foreseeable future. At the core of the issue lies in the assurance of robust, skilled human resources in place.

University-Industry Partnership (UIP)

It has been globally recognized that the key to attracting, training and retaining the next generation of aviation professionals is University-Industry partnership (UIP). Universities are the source of knowledge, and development needs of education and training for industrial transformation are best met by forging relationship with Universities. This is a two-way approach by which knowledge is transferred through collaborative support from Universities, Transferring of knowledge is also possible through: education and training, consultancy services, contract research, collaborative research, licensing, etc. Likewise, collaborative support from aviation industry is ensured through active involvement in University – Industry dialogue, offering venue for experiential learning and placement support (BE students of TU in internship learning and aspirations for training in aviation engineering are some of the recent and current instances), collaborative research and innovation. Thus synergies can be created for mutual benefits.

6. The Way Forward for Transformation

What makes the service sector of aviation training different from other service sectors is the understanding that aviation training is a dynamic component which requires a fast adaptation to internationalism, adoption of sophisticated technology, constant exposure and access to training development events taking place in the international platforms, application of knowledge for instant and long term problem solving, etc. This implies huge financial investment. Maintenance and upkeep of high morale among the training personnel and assurance of rational succession planning are equally considerable. At the heart of the foregoing challenges lies the need for CAA to become a collaborated institution so that a decisive, authoritative, and directive role could be occupied in order to be sustained. Competency across training development and delivery, technological adoption, budgeting and infrastructural development at par with international aviation curriculum is something that can be achieved through autonomous working of CAA. Although CAAN is in process of separating its role of regulator and service provider, the functional efficiency of CAA would spring from the notion of ownership and control. Since CAA is for CAAN as well as several stakeholders representing the government, aviation industry, Universities, airports and international community, etc, (see the proposed roadmap), belongingness is a sharable wisdom to ensure in place a financially strong training organization. One of our key roles in CAA is to bring representatives of States, industry and international organizations together to foster agreement around solutions that help to realize a sustainable aviation system. At the heart of these solutions are the people whose performances are critical to realizing this progress. Individually and as teams, these workers need to be competent, and their organization need to be sustained– the travelling public depends on it – and though there are many ways to improve human performance the best of these is through training and its organizational efficiency. In this regard, a roadmap model delineating representational collaborative aspect and a training typology is suggested for consideration by concerned authorities for CAA's transformation to a National Civil Aviation Academy (NCAA) as proposed. The proposed NCAA to be established under Ministry of Culture, Tourism and Civil Aviation (MOCTCA) will fully satisfy the current and future training needs of the training stakeholders namely CAAN, Aviation Security Service Provider, Nepal Airlines Corporation (NAC), Nepal Airports and Air Navigation Services Authority, Private Airlines, Aviation Sports Operators and others representing immigration, customs, travel trade, etc., who will also be the investors.

The proposed roadmap strives to take two courses: aviation specific, skills based training courses divisible into flight training (FT) and ground training (GT) on the one hand, while high cognitive, academic specialization Bachelor degree courses in the areas of airport engineering, aviation technology and management, on the other. Foundational courses are essential from the standpoint of knowledge economy. It is worth mentioning that such foundational courses have already been visible as vibrant aviation curriculum in almost all the developed economies of the world as well as in several aviation training academia in the Asia Pacific Regions and ASEAN.

Since the CAAN is at the juncture of getting separated into regulatory function and service provider function, CAA must have its role, function and position clearly delineated under which to operate. This is essential to realize the principles of autonomy, cost recovery, quality and sustainability that the Civil Aviation Academy has embraced towards meeting its vision of becoming "An Internationally recognized academy of excellence in the development of quality human resource at national and regional level." It is understandable that given the multifarious stakeholders' training needs, CAA should be run under the Ministry (as shown in the roadmap) to fully cater the training needs of the stakeholders while also being able to keep pace with international requirements, trends and forces shaping aviation training sector. Therefore, it is high time for the concerned authorities to consider adopting appropriate strategies and approaches for CAA's metamorphosis.

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CRM- Crew Resource Management

1. Introduction

Nepalese Aviation is a part of global aviation industry. We must always strive for the modernization of our aircraft fleets operation, maintenance and training to improve safety. In global aviation, Crew Resource Management (CRM) is one of the important factors to be considered for maintaining safety. As an Instructor of Crew Resource Management, I would like to share some of my views on CRM. CRM was developed as a response to new insights into the causes of aircraft accidents which followed from the introduction of flight recorders and cockpit voice recorders into modern jet aircraft. Information gathered from these devices suggest that many accidents result not from technical malfunction of aircraft or its systems, nor from failure of aircraft handling skills or a lack of technical knowledge on the part of the crew; it appears instead that they are caused by the inability of crew to respond appropriately to the situation in which they find themselves. For example, inadequate communication between crew members and other parties could lead to the loss of situational awareness, a breakdown in teamwork in the aircraft, and ultimately to a wrong decision or series of decisions which result in a serious incident or a fatal accident.

The widespread introduction of the dynamic flight simulator as a training aid allowed various new theories about the causes of aircraft

2. CRM Defined

CRM encompasses a wide range of knowledge, skills and attitudes including communication, situational awareness, problem solving, decision making, and teamwork; together with the entire attendant sub-disciplines which each of these areas entails. The elements which comprise CRM are not new but have been recognized in one form or another since aviation began, usually under more general headings such as 'Airmanship', 'Captaincy', 'Crew Co-operation', etc. In the past, however, these terms had not been defined, structured or articulated in a formal way, and CRM can be seen as an attempt to remedy this deficiency. CRM can therefore be defined as a management system which makes optimum use of all available resources - equipment, procedures and people - to promote safety and enhance the efficiency of flight operation.

CRM is concerned not so much with the technical knowledge and skills required to fly and operate an aircraft but rather with the cognitive and interpersonal skills needed to manage the flight within an organized aviation system. In this context, cognitive skills are defined as the mental processes used for gaining and maintaining situational awareness, for solving problems and for taking decisions. Interpersonal skills are regarded as communications and a range of behavioral activities associated with teamwork. In aviation, as in other walks of life, these skill areas often overlap with each other, and they also overlap with the required technical skills. Furthermore, they are not confined to multi-crew aircraft, but also relate to single pilot operations, which invariably need to interface with other aircraft and with various ground support agencies in order to complete their missions successfully.

3. Cognitive Skills

(a) Situational Awareness:

Situational awareness involves conscious recognition of all the factors and conditions - operational, technical and

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human - which affect the safe operation of an aircraft. In order to establish situational awareness, human beings take in information through the five senses - touch, hearing, smell, sight and taste - both subconsciously or intuitively. This information is then transformed by the brain into a mental model of the situation, a process known as perception. The perceptive process depends not merely on current information for the evaluation of the situation but also takes account of past experience and sensations. Perception is therefore a product not only of immediate sensations but also of cultural and social influences acquired through a lifetime of experiences. Accordingly, because of the different factors which have shaped their lives, individuals interpret situations differently. Furthermore, they can also be unduly influenced by false information derived from the senses, such as illusions. Because of these factors, a high degree of situational awareness can be said to be achieved only when an individual's perception of events approaches the reality of the situation.

For the pilot of an aircraft, much of the information from which situational awareness is derived comes from the flight instruments and the navigational equipment on board, so the process of constructing an accurate mental model of the position of the aircraft in space, its condition, and the condition of the crew, is subject to a number of degrading influences such as inattention, distraction, under-arousal, stress, boredom, fatigue, etc. In these circumstances, confirming the accuracy of mental models with other

crew members by sharing information and perceptions about the situation, and by stating intentions, becomes of paramount importance for the safe and effective management of the flight. Furthermore, sharing knowledge and information not only helps to avoid the more obvious incidents and accidents arising from loss of situational awareness, such as controlled flight into terrain, but also lays a firm foundation for high quality decisions regarding the overall management of the flight.

(b) Planning and Decision Making:

The central aim of CRM is to ensure that high quality decisions are taken across the whole spectrum of flight operations. In this context, thorough pre-flight planning will not only provide a yardstick against which in-flight decisions can be made but will also allow all members of the crew to manage their own specific areas of responsibility successfully. Understanding the plan also allows individual crew members to contribute in the most effective way to decisions made in flight. It is important, therefore, as the flight progresses, that the Captain updates the crew at regular intervals on any changes to the original plan, so that individual crew member can maintain good situational awareness. This is particularly important during abnormal operations or in an emergency situation, where conditions affecting the progress of the flight and the safety of the aircraft are likely to change rapidly. In these circumstances, regular updates on the status of the flight allow each individual crew member to be sufficiently aware of the situation and needs of the moment to contribute in the most effective way to the decision-making process.

Allowing subordinate crew members to participate in the decision-making process does not mean that all decisions have to be made by committee. The degree of participation or otherwise from subordinate crew members depends to some extent on the type of behavior which underpins the decision. Skill-based behaviors rely to a large extent on prior learning and any associated decisions are made mainly subconsciously. In this situation, other crew members provide a passive monitoring role, although this may call for assertive intervention if the level of skill being displayed by the decision-maker falls below a safe

standard (for example, if it is perceived by a non-flying crew member that the aircraft may be inadvertently descending in cloud towards high ground). Rule-based behaviors rely on previously-considered courses of action such as Standard Instrument Departures (SIDs), Standard Operational Procedures (SOPs), Flight Manuals, etc., and the associated decisions are made partly in the subconscious, where previous experience and training come into play, and also in the conscious mind, where previous learning is compared with the realities of the current situation. In these circumstances the participation of another crew member may be required to provide verification of the situation and validation of the course of action being proposed by the decision maker.

Finally, knowledge-based behavior is utilized in a situation which has not previously been encountered. In these circumstances, the crew is called upon to make a decision based upon a rational appraisal of the facts, so there may be considerable scope for the involvement of other crew members and - if time and circumstances permit - even outside agencies such as ATC or Technical Control.

4. Interpersonal Skills

(a) Communication:

From the foregoing discussion on cognitive skills, it is evident that effective Communication between crew members is an essential prerequisite for good CRM. Research has shown that in addition to its most widely perceived function of transferring information, the communication process in an aircraft fulfils several other important functions as well. It not only helps the crew to develop a shared mental model of the problems which need to be resolved in the course of the flight, thereby enhancing situational awareness, but also allows problem solving to be shared amongst crew members by enabling individual crew members to contribute appropriately and effectively to the decision-making process. Most importantly, it establishes the interpersonal climate between crew members and is therefore a key element in setting the tone for the management of the flight. The communication process invariably takes place in a social and organizational context and it is therefore profoundly influenced by company

culture. Its effectiveness also depends on the experience level of the pilot or crew members involved in the transaction and their perception of their roles and position in the chain of command. The effectiveness of the communication process also depends on the nature of the task and operational context in which the flight is taking place - e.g. the phase of flight, and whether it is being conducted under normal, non-normal or emergency conditions. In addition, it is affected by the mode of speech employed and the linguistic context in which the transaction takes place. In this context, individual style, body language, grammatical styles and speech patterns all have their part to play. Because of these complexities, crew members need to be aware of and sensitive to the nuances of effective communication. They also need to understand and avoid where possible those elements which constitute a barrier to effective communication.

(b) Teamwork:

Successful teamwork is achieved when the output of the team is greater than that which could be developed by the sum of the efforts of the individual crew members acting in isolation - a process known as synergy. Synergy is produced by a process of interaction between crew members, whereby each individual is empowered and encouraged to contribute in the most effective way to the overall task of the team. Interaction is unlikely to occur, however, unless all individual members of the team fully understand their role within the group and how this role may vary depending on the circumstances under which decisions are being made and actions taken. Consequently, good communications within the group, a high degree of situational awareness and a comprehensive understanding of the decision-making process by all members of the group are all prerequisites for the creation of synergy and the effective performance of the team as a whole. For operational reasons, many crew members form part of a new team on every flight, so it is important that the overall organization culture encourages and fosters a climate in which good teamwork can flourish. It is also evident that a healthy organizational culture, which actively promotes CRM, will also foster good teamwork, since CRM and teamwork are inextricably intertwined in the realm of effective flight management techniques.

5. Factors Affecting Individual Performance

(a) Emotional Climate:

The term 'emotional climate' refers to the way that people in the team feel about themselves and each other during flight operations. Research indicates that factors which create a positive tone individually and collectively on the flight deck and among the wider operating team enhance the effectiveness of the cognitive and interpersonal skills displayed by crew members. Factors that affect the emotional climate in which the team operates include perceptions of safety, clarity of job and task expectations, supportive communication, participation and involvement, recognition for contribution and freedom of expression. While the climate or tone of the operation depends to a large extent on the attitude and conduct of the Captain, every crew member should, nevertheless, be aware of the significance of a good working climate, and strive to put into practice those behaviors that are conducive to it.

(b) Stress:

A factor which can quickly undermine the emotional climate in which the crew is operating is stress - defined as a state of highly unpleasant emotional arousal associated variously with overload, fear, anxiety, anger and hostility - all of which threaten both individual performance and teamwork. Stress often arises as a result of a perceived gap between the demands of a situation and an individual's ability to cope with these demands. As stress involves the processes of perception and evaluation, it impinges directly on the cognitive and interpersonal skills which form the basis of good CRM. Both arousal and alertness are necessary to enable each individual to achieve optimum performance in CRM-related skills, but too much or too little arousal will have a significantly adverse impact on the ability of the crew to function effectively as a team. It is therefore important for crew members not only to be aware of the symptoms of stress in themselves and others, but also to understand the effects which stress can have on CRM, and to mitigate these effects where possible by taking measures to counter them.

(b) Managing Stress:

In high pressure situations, stress can be relieved by establishing priorities and by delegating tasks to other members of the crew, but this technique can be successfully implemented only if an organizational culture has been established in the first instance which empowers subordinates by training them in the cognitive and interpersonal skills which will enable them to take on additional responsibility when the circumstances call for it. In a low pressure situation, where fatigue, boredom and over-familiarity with the task are the greatest hazards, careful attention to environmental conditions such as heat, humidity noise, vibration and lighting can help to maintain alertness. Concern of individual crew members for their own physical well-being by keeping fit and maintaining a healthy lifestyle, in so far as the demands of the job allow, will also help to ensure that they are best able to contribute to the team effort when the need arises.

(c) Commercial, Organizational Pressures and Morale:

Stress has been discussed earlier, but special mention should be given to commercial and organizational pressures, whether short term or long term, since these are often cited as being stressors, and can have an effect on morale. This topic needs to be taken into account by CRM instructors when training, and when debriefing, and an opportunity given to the pilot undergoing training or checking to voice his/her concerns if such pressures are perceived to be a problem. Of course the solution to such a problem is not within the remit of CRM, or of training in general, but it may be appropriate for the instructor to provide feedback to the operator of this, and any other, issue(s) which might be adversely influencing the performance of flight crew, and hence affecting CRM.

(c) Fatigue:

Alertness and fatigue are factors which can affect individual performance and hence, CRM. The more fatigued you are, the less able you will be to cope with stress and workload. Obviously, efforts should be made to avoid undue fatigue in the first place but if it is unavoidable, good CRM should help you recognize the signs of fatigue in yourself and others, and take appropriate measures to ensure that it is not detrimental to performance (e.g. napping, where appropriate and allowable, drinking coffee, etc.). Fatigue is a major and sometimes complex topic within human factors, and is only referred to briefly here as one of the several factors which can affect performance.

(d) Incapacitation:

An extreme case of performance decrement is incapacitation of one, both an extreme case of performance decrement is incapacitation of one, both or all flight crew members. Pilots are trained in what to do under such circumstances but must not forget that CRM in its wider context is still, in fact more, important (e.g. CRM between the non-incapacitated pilot and cabin crew, and between flight deck and ATC). Training, whether standard LOFT exercises or CRM scenarios, should ensure that flight crew can cope with situations where partial or complete incapacitation might occur.

6. CRM Training

To maximize their effectiveness in the aircraft, crew members not only need to acquire a sound grasp of the technical knowledge and skills necessary for the fulfillment of their particular role in the aircraft, but they also need to understand and develop the cognitive and interpersonal skills which are a prerequisite for good CRM. The nature of these latter skills, however, is such that they cannot readily be taught by the didactic training methods normally used to impart technical knowledge about the aircraft and its systems - methods sometimes referred to as 'chalk and talk'. Cognitive and interpersonal skills - CRM skills - are mostly concerned with understanding and interpreting behavior, particularly behavior which occurs in a group context, so they are more appropriately developed through a process known as experiential learning. Successful experiential learning occurs when an individual reflects on his or her past behavior in a given organizational situation and gains sufficient insight to form a rational basis for behaving in a more effective way when faced with similar circumstances in the future. Consequently, CRM training usually takes place in groups and is often assisted by a trained

facilitator who is equipped with the relevant knowledge, skills and techniques to foster the learning process.

For both historical and practical reasons, CRM skills have tended to be taught separately from technical knowledge and skills, but the considerable area of overlap between the two disciplines suggests that the training would be more effective if it were integrated from the earliest stage of the aircrew training.

7. Behavioral Markers

Knowledge and experience about CRM built up in recent years by the use of facilitative training techniques has led to attempts to define optimum performance by the use of behavioral markers. Although these attempts are still in their infancy, a successful outcome would not only help to define more clearly the cognitive and interpersonal skills required for good CRM but also allow for a standard approach to the current problem of assessment, feedback and further training of individual crew members.

8. Conclusion

As shown in the above picture, CRM is on the top supported by Technical knowledge, Proficiency, physical and mental well being of the crew. From above we can conclude as below:

(a) The concepts which underpin CRM are not new or gimmicky; rather they are an attempt to distil old axioms into a more coherent and cogent management style across the flight regime. Safe and efficient flight operations depend for their success not merely on the acquisition of sound technical knowledge and skills but also on the mastery by aircrew of the cognitive and interpersonal skills which form the basis of good CRM. Cognitive skills not only allow for the development and maintenance of good situational awareness but also underpin high quality problem solving and decision making techniques. In addition, interpersonal skills, which depend for their effectiveness on good communications, encourage the creation of synergy and the development of successful teamwork. Both cognitive and interpersonal skills are enhanced by a good emotional climate amongst the crew, but they are also easily degraded by stress. Therefore, management of the emotional climate and stress becomes an integral and important element of good CRM.

(b) Currently, in many airlines, technical training and training in CRM skills is carried out separately, but in view of the crucial part which each aspect plays in the safe and efficient operation of aircraft, both types of training need to be integrated at the earliest opportunity. Moreover, CRM training would be considerably enhanced if a satisfactory and universally agreed set of behavioral standards could be developed. To ensure that the training is effective, CRM skills also need to be assessed in conjunction with the evaluation of technical knowledge and skills, based on a satisfactory method of assessing CRM skills that has been devised and accepted on an industry-wide basis.

(c) CRM is not, therefore, merely an abstract management concept; it embraces principles and skills which, if combined with a high degree of technical knowledge and skill, will enable the crew to make best use of all available resources to achieve optimum efficiency in the conduct of operations while at the same time maximizing the safety of the flight.

I hope, Nepalese Aviation continues in depth CRM Training in upcoming days.

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Fly, O Helicopter! Fly
In the sublime Himalayan sky

Development and Management of Civil Aviation in Nepal : Historical Background and Challenges

History

Though air services in Nepal started in 1950, Civil Aviation Department came into being for the first time in Nepal in 1957 only as a separate department under the Ministry of Works, Communication and Transport (MOWCT). In 1983, it was moved from the MOWCT to the Ministry of Tourism which has been transformed to the Ministry of Tourism and Civil Aviation since 1994. Civil Aviation Act 2015(2059) was the first legal instrument to regulate the civil aviation in Nepal. Nepal became member of International Civil Aviation Organization in 1960.

Air traffic control in Nepal was carried out by technical personnel from India under the Indian technical assistance. As the manpower got trained, the air traffic control in Nepal was fully taken over by Nepalese technical personnel in 1972.

During the period from 1957 to 1985, the Director Generals of the Department of Civil Aviation were appointed from among the civil or mechanical engineers of the Ministry of Works and Transport. The first Director General from the Civil Aviation Department cadre, an Air Traffic Controller, was appointed in 1985 and served till 1992.

The need for organizational change for the DCA was recommended by several studies during 1970 to 1990 including the O&M study by Dr. Devendra Raj Pandey, the ICAO technical assistance study and the Asian Development Bank reports. The main thrust of these studies was to establish an autonomous civil aviation authority of Nepal.

In the major reshuffle in civil service in 1992, head of department of many departments, including Civil Aviation, were changed. Under the new leadership, the change in the institutional arrangement of civil aviation was initiated in a two pronged strategy, namely, i) immediate changes in the existing departmental set up, and ii) initiating the process of transformation of the fully government controlled department of civil aviation to an autonomous civil aviation authority. As a result, the Department of Civil Aviation (DCA) was reorganized in 1993-1994. Fifteen positions of the gazetted class I against the existing two position and 73 gazetted class II positions against the existing 50 positions were created. Preparing a proactive human resource to cope up with the challenges of growing and technology driven air transport regulations and operations required some radical changes in the culture of indifference and stagnation. Grooming the civil aviation cadre to managerial and leadership positions and providing hopes of career advancement from the rather monotonous and stagnant civil service conditions for the staff of the DCA at that time was therefore the main objective.

National Civil Aviation Policy was prepared for the first time and was approved by the government in 2050 (1993) which opened up air service operations by private sector and spelled out the need for establishment of autonomous Civil Aviation Authority of Nepal and its role as the only aeronautical authority of Nepal.

Till 1994, the national flag carrier was flying without an approved operation manual. The air traffic services and the air worthiness requirements were followed based on ICAO expert's recommendations but without any formal approval of the government. These manuals and requirements in English language would not go to the cabinet for approval since their translation into Nepali would be impracticable and there was no legal mandate to the Director General of civil aviation department to approve these documents. It was only in 1995 that civil aviation rules, 1962 were amended which empowered the DGCA to approve the manuals, guidelines and the technical documents related to civil aviation.

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The process of creating a legal basis for an autonomous civil aviation authority was completed in 1996 with the promulgation of Civil Aviation Authority of Nepal Act, 2053(1996) on 20 November 1996. Civil Aviation Authority of Nepal (CAAN) was formally established on 31 December 1998 when the existing Department of Civil Aviation was dissolved. CAAN is now going to enter into the 15th year of its existence.

Towards improvement in aviation safety, Nepal's initiatives to establish the ICAO proposed Cooperative Development of Operational Safety and Continuing Airworthiness (COSCAP) for South Asia comprising Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, materialized and the COSCAP was established in 1997 after the first steering committee meeting held in Bangkok in 7-8 January 1997 where DGCA Nepal was elected Standing Chairman of the project steering committee. The COSCAP-South Asia was the first ever co-operative arrangement established between ICAO Contracting States under the patronage of the ICAO Technical Cooperation Programme for the development of operational safety and continuing airworthiness concerning commercial aircraft operations in the participating countries. The success of COSCAP-South Asia has led it to a third phase of the programme for 2008-2012 and COSCAP has been replicated by other regions of ICAO member States by the establishment of COSCAP-South East Asia, and COSCAP-North Asia.

The Growth Trends

Despite an unstable political environment and frequent changes in the leadership in the Ministry and the CAAN, civil aviation in Nepal has witnessed appreciable growth in the air traffic movements. It has served as a prime mover of tourism industry and a reliable means of transport at the time of road closure by natural and manmade disasters. By the end of 2011, the total international passenger movement at the Tribhuban International Airport (TIA) at Kathmandu reached 2.7 million and domestic passenger movement reached 1.58 million compared to 780,297 international pax and 292,137 domestic pax movement in 1992. This gives an average annual growth of 6.5% for international and 8.5% for domestic air traffic in Nepal which is more than the forecasts of any of the innumerable studies carried out by the international aviation consultants in Nepal.

The international airlines operating to and from Kathmandu are now 28 in number as compared to 10 in 1994. Seventeen domestic airlines are operating now, while there was only one in 1990. The total number of Air Operating Certificates issued so far by CAAN is 69, out of which about fourty percent are expired.

Seventeen AOCs relate to the aviation sports such as paragliding, ballooning, and power gliding. Aviation-sports is an important component of tourism. The popularity of paragliding in Nepal is encouraging. Heli-trekking and heli-skiing are other aviation sports not well explored in Nepal.

The Civil Aviation Authority started running in profit after about five and half years of its establishment that is since fiscal year 2003-2004 (2060/61). In the year 2010-011, the total revenue of Rs 2.72 billion and the net profit was Rs. 740 million. The total revenue in the year 1993/94 was Rs. 114 million.

Career advancement opportunity wise, two air traffic controllers of the former DCA have become Secretary of the Ministry of Tourism and Civil Aviation and six ATCs have become the Director General of CAAN.

Updating knowledge and skills is very important in civil aviation. The budget levels and authority levels for participation in foreign seminar, conference, and training in the regular civil service environment was a bottleneck for the department of civil aviation. This is no more a problem because the CAAN is empowered to make the necessary budget provisions and the DG of CAAN has the authority to decide the nominations of the trainees or participants.

It may be noted that the international and national consultants had recommended for the transformation of DCA to an autonomous civil aviation authority but when it was in the process of establishment, the international consultant at that time (in 1997) declared it unfeasible. Nevertheless, the government of Nepal proceeded with the transformation which has now proved to be a milestone in the dynamic process of the overall growth of civil aviation in Nepal.

The Challenges

Traffic and Airports: The international and national aircraft movement in Nepal has been 22,792 and 79,260 in number respectively in 2011. This amounts to one flight every 2 to 3 minute in Kathmandu. For the bowl shaped air space and a single runway of Kathmandu, this is already too much to handle. A new international airport, the proposed second international airport at Nijgadh, is absolutely essential for keeping the prospects of the growth of tourism resource unlimitedly open and to save Kathmandu from the pitfalls of unmanaged growth. Accelerating the pace of the implementation of Kathmandu-Terai/Madhes Expressway is therefore very essential in this regard. There will be a need of 2 to 3 billion U.S. dollar for the next five to 10 years to realize these major projects of crucial importance to Nepal. This is not too much provided there is a will and continuity of determined implementations regardless of political vulnerabilities.

Security and Safety and ICAO Audits: On an operational basis, the major challenge in aviation worldwide is the threat to aviation security from terrorism. The equipment and human resources at the airport and the security apparatus of the government needs to be up to date, effective and efficient to cope up with the challenges of global aviation security. The Annex 17 to the convention on international civil aviation provides an international standards and recommended practices relating to the Security - safeguarding international civil aviation against acts of unlawful interference. The updated Annex 17 needs to be applied by all contracting states. The Universal Security Audit Programme (USAP) of ICAO is regular, mandatory, systematic and harmonized audit by ICAO. They cover States' aviation security oversight capabilities as well as auditing security measures at selected airports based on the principles of sovereignty of States; universality; transparency; objectivity; fairness; equality; timeliness; all-inclusiveness; and confidentiality.

Another challenge in aviation is the aviation safety. ICAO conducts Universal Safety Oversight Audit Programme (USOAP) on a regular basis to determine the States' capability for safety oversight by assessing the effective implementation of the critical elements of a safety oversight system and the status of States' implementation of safety-relevant ICAO SARPs, associated procedures, guidance materials and safety-related practices. The ICAO comprehensive system approach of USOAP looks into eight areas, namely, legislation and regulation; personnel licensing-Annex 1; Aircraft Operations-Annexes 6,18, and PANS-OPS; Airworthiness of aircraft - Annexes 6,7,8,16; Organization and safety oversight functions; Aerodromes-Annex 14; Air Navigation System-Annexes 2,3,4,5,10,11,12,15 and PANS-ATM; and Accident and Incident investigation-Annex 13. Contracting States need to apply the SARPs of all these updated Annexes to the International Convention. It is the responsibility of the State to establish a State Safety Program (SSP) and oversight the implementation of Safety Management System (SMS) by the aircraft operators, maintenance organizations and service providers in accordance with the ICAO Annexes 1,6,8,11,13 and 14.

Proper management of safety and security according to the ICAO requirements and recommendations is a huge task for the aeronautical authority. It involves sufficient staffs and adequate budgets to provide basic training, and to keep them updated

through state-of-art trainings, seminars and conferences at home and abroad. Foreign travel and training is an important cost component of the human resource development of civil aviation and it can neither be compromised nor ignored. Besides, the updating of practical experience in the hot seats through cross departmental transfers shall be valuable in the application of the regulatory functions. The charge mechanism from the regulatory and air navigation functions only cannot meet the required level of committed resources. It is the aeronautical and non-aeronautical revenues from the airport operation that provides a sustainable base for meeting the costs of regulatory and air navigation functions.

Development of New Airports: Construction of a new international airport at Pokhara is long overdue. Similarly, Gautam Buddha Airport is being improved to international airport level. Before making any commitment for development of airports, CAAN must ensure that the revenue streams after the completion of these airports are adequate for the repayment of principal and interests on loans, additional interests to the government, and the operation costs. These airports should not transfer their burden to the earnings of TIA and other domestic airports. Financial pressure on these airports may severely affect their safe operations to the ICAO standards. Similarly the cost of development of new airports in the remote areas should not be passed on to the CAAN. The most that can be done by CAAN is to cross subsidize the operations only for the remote area airports. It is the responsibility of the government to take up or subsidize the construction and operation of the new international and remote area domestic airports that cannot generate adequate revenue from the commercial principles.

Construction of New International Airport (NIA) at Nijgadh cannot be funded out of the CAAN revenue. Development of this airport on public private partnership basis by attracting foreign investment will be possible only if the government contributes at least 15 to 20 percent of the cost on viability gap funding principles. Vigorous participation of the government to provide the land and to free the private party from local problems of permits and bureaucratic hurdles becomes absolutely essential for the success of the NIA.

Besides, the Kathmandu-Nijgadh Expressway must complete before the NIA.

The impact of NIA on TIA after the completion of NIA is not going to be of a serious concern because TIA will be easily sustainable even if the international traffic is only about 1.5 million per year whereas, the international air traffic to Nepal after 10 years will reach about 5 million at an annual growth rate of 6% only. Once the NIA is ready, TIA could be good enough for the residual international traffic and the entire domestic traffic to and from Kathmandu.

A medium term to long term business plan of CAAN must be cleared before major capital investment programs are planned by CAAN. Government should create a separate "NIA Authority" to build and operate the NIA under PPP.

Restructuring of CAAN: Capacity development study under the technical assistance of ADB is believed to address most of the issues of capital investment, safety and security in the civil aviation sector in Nepal. The idea of splitting CAAN into two or three independent Authorities e.g. regulatory, air navigation and airport operations is apparently an ideal thinking from the point of view of separating regulatory and operational functions, but in reality, there is a danger of regulatory and air navigation authorities suffering from lack of budget and employee motivations. These can be separate entities under the CAAN umbrella with built-in safeguards against conflicts of interests. The size of the work, the culture of the organization, and the trends of civil service remunerations in Nepal needs to be thoroughly analyzed before ideal conditions based on other environments are planned for the civil aviation agencies in Nepal.

CAAN has recently changed its organizational structure to give a focus on safety and air navigation functions. It is to be seen how much it can cope with the amount of safety oversight functions covered by 16 of the 18 Annexes of the ICAO and the areas covered by ICAO USOAP. Traditionally, the line functions such as licensing, air worthiness certifications, and issue of AOCs consume most of the interest and time of the Safety Regulation Directorate. Aviation Security Department is placed directly under the

DG but it s not clear how the ICAO Annex 17 requirements and the areas covered by the ICAO Universal Security Audit Program (USAP) shall be met by this department. Organization restructuring without relating the scope of work of each Directorate, Department, and Division with the short term, and medium term and long term business plan along with the delegation of defined levels of authority and interrelationships with other public and private agencies shall not be able to bring about a meaningful performance and desired changes. The security and safety management systems as per the latest requirements of ICAO Annexes involve the areas and role of organizations outside the CAAN such as Ministry of Law and Justice, Ministry of Home Affairs, Ministry of Defense, Ministry of Finance and Ministry of Tourism and Civil Aviation. Clarity in their roles and the interfacing by CAAN becomes essential for the effectiveness of the security and safety program implementation. The organizational structure should address this factor also.

Procurement: CAAN Act 2053 (1996) provides the power to CAAN Board to make the necessary rules. CAAN has not formulated its own rules on procurement and has fully adopted the Public Procurement Rules 2007 (PPR) framed by the government under the Public Procurement Act 2007. The new organization structure needs to establish 2 to 3 procurement units in each Directorate to streamline procurements within the spirit of the PPA 2007. CAAN has so far been preparing bid documents based on employer design type conditions of contract and the standard bidding document. Capacity for procurement based on Plant Design and Build, Engineer Procure and Construct (EPC), Design Build Operate (DBO), and Design Build Finance Operate Maintain and Transfer (DBFOMT) methods also needs to be developed to improve the overall performance of CAAN in terms of improving the value for money.

Revenue and Sustainability of Organization: The major revenue source of CAAN is the international airport at Kathmandu,TIA. Four hub airports and another 10 touristic-domestic airports are barely profit making airports. The rest of 39 domestic airports and the five more under-construction airports are not

in a position to earn the operating costs also for many years in future. CAAN is subsidizing these airports. The costs of the CAAN headquarter and the regulatory functions are borne out of the income from the profitable airports. Diverting the revenue of TIA recklessly to the development of other international airports and the low traffic remote area airports will constrain TIA from receiving the required level of budget for operating the airport at the international standards and in conformity with the airport certification requirements of ICAO. Similarly, the standards of other domestic airports shall be affected adversely.

ADB is providing soft loan and grants for the improvement of TIA. TIA does not need any other investment either national or foreign. It must remain as the backbone of civil aviation safety and security and a reservoir of skilled aviation manpower. Management improvement of TIA involves improvements in the security system provided by Nepal Police, improvement in the immigration services from the Ministry of Home Affairs, and improvements in the customs services and the cargo handling related to the Ministry of Finance. Therefore, CAAN cannot be truly self reliant in these respects. Improvement in management of the TIA may be considered on a

management contract basis provided the required level of cooperation of the various agencies outside the CAAN but inside the TIA can be ensured.

What needs to be separated is the development of new international airports and the remote area airports that cannot be operated on commercial principles for several years in future. A separate Airport Development Authority may be created to construct and operate Nijgadh International Airport, Lumina International Airport, Pokhara international airport and the new domestic airports under the MOCTCA.

The Road Ahead

Civil Aviation Authority of Nepal (CAAN) has survived so far with over 6 % annual average growth for over a decade and a profit scenario for the last eight years. It is very encouraging due to the fact that it is fully managed by native manpower. However, there are new challenges of growing traffic and safety concerns with proposals to its break up into several independent authorities and over burdening it with investments in new airports - international and domestic. Employee motivations and morale seems to be declining due to the uncertainties

ahead and the interferences from various externalities. CAAN needs to move ahead with a clear-cut medium term and long term business plans delineating its roles and the roles of other agencies of the government and freeing itself from the burden of investing in the new airports. The business plans must provide for adequate resources for security and safety program implementations and oversights as per ICAO standards and recommended practice and to provide attractive package of remunerations and performance based incentives to its staff. The organization must continue to have a strong and assured resource base such as TIA. The revenue from TIA must be pumped back to TIA sufficient enough to maintain and operate it at the international standard comparable to any other airport of the world. Management of TIA may be improved through management contracts based on a transparent and competitive bidding process involving highly reputed firms. A long term financing and handover of TIA to private party must be avoided in the overall interest of the civil aviation in Nepal. Civil Aviation has given a lot to many of its staffs and the private sector. It is time now that they give something to Civil Aviation.

A red machine-bird, the helicopter, flying just over a glassier.

नेपालको उड्डयन परिदृश्य र सुधारको अपरिहार्यता

१७ डिसेम्बर १९०३मा एउटा चालकले १२ सेकेण्डमा १२० फीटको जोखिमयुक्त उडान भरेबाट प्रारम्भ भएको उड्डयन इतिहासले क्रमश: अपेक्षित सफलता हासिल गरेको परिणति स्वरुप अहिले एउटै विमानमा ५५०भन्दा बढी यात्रुहरु र हजारौं टन मालसामानसहित निरन्तर १६-१७ घण्टाको दूरी सुरक्षित र सहजताकासाथ तय गर्नसक्ने हैसियत बनाएका कारण आज सिङ्गो विश्वनै एउटा गाउँमा परिणत भएको छ भन्दा अत्युक्ति नहोला । अब त वाय्यानको प्रयोग लामो दूरीको देशविदेशको द्रुत र सहज यात्रामा मात्र सीमित नरही मानव जीवनको यस्तो अभिन्न अङ्ग बनिसकेको छ कि २१औं शताब्दिमा यसबिनाको जीवनको कल्पनासमेत गर्न सकिदैन ।

विशेषत: आफ्नै भूबनोटका कारण नेपाल उड्डयनको देश बन्न विवश रहेको यथार्थका बावजूद, विश्वमा वायुसेवा संचालन इतिहासको साढेतीन दशक पछिमात्र यहाँ वाय्यान संचालनको क्रम प्रारम्भ भएको देखिन्छ । ज्ञातव्य छ कि उड्डयन क्षेत्र विश्वकै अत्यन्त गतिशील, उच्च प्रविधियुक्त र अन्तर्राष्ट्रिय प्रकृतिको भएकोले पनि संसारका स्थापित मूल्यमान्यता र स्तरबमोजिम संचालनको विशिष्टता कायम राख्नु यसमा संलग्न हरेक व्यक्तिको गहन अभिभारा हुन्छ । तर त्रुटिरहित संचालनको मान्यता कायम राख्नुपर्ने यस्तो संवेदलशील क्षेत्रलाईसमेत गलत नेपाली ढर्राको अङ्ग बन्नबाट मुक्त राख्न नसकेबाट प्रशस्त सम्भावना बोकेको यस क्षेत्रले यहाँ अपेक्षित उपलब्धि हासिल गर्न नसकिरहेको तीतो यथार्थ स्विकार्नै पर्छ ।

हुनत, यहाँ पर्यटनलाई देशको आर्थिक मेरुदण्डका रुपमा चित्रण गर्दै सिद्धान्तमा यसको विकासलाई सबैले प्रोत्साहन दिनु पर्ने बताइन्छ । तर, व्यवहार भने यसको विकासमा टेवा पुऱ्याउनुको साटो यसको शोषण गर्नेतर्फ केन्द्रित रहेको छ भन्दा अत्युक्ति नहोला । उपमाका लागि, त्यसैत इन्धनको उत्पादनबाट वञ्चित यो मुलुक । त्यसमाथि भूपरिवेष्ठित हुनकासाथै समुद्रसँगको दूरी र आयातका लागि एउटै देशमाथिको परनिर्भरता । अनि भएन भनेर मिलिभगतमा ढुवानीमा हुने गरेको उच्च कमिसनको खेललगायतका कारणले यहाँ उपलब्ध हुने इन्धन अत्यन्त महँगोमध्येमा पर्दछ । त्यसमाथि, सायद यस क्षेत्रमा अपेक्षाकृत कम आन्दोलन हुने गरेबापतको पुरस्कार स्वरुप होला राज्यसंयन्त्रबाटै वाय्यानमा प्रयोग हुने इन्धनमा नाजायज मूल्य वृद्धि गरी नेपाल आयल निगमको अनुचित धाटा न्यूनीकरणमा टेवा पुऱ्याइने गरिएबाट यहाँ उपलब्ध हुने हवाई इन्धन विश्वकै महँगोमध्येमा पर्छ । वायुसेवा कम्पनीहरुले सो लागत उपभोक्ताबाट उठाउनेनै भए । फलत: यहाँ भ्रमण गर्ने पर्यटकमात्र होइन हवाई यातायातको प्रयोग रहर या विलासिताको माध्यमका रुपमा नभई वाध्यताबश गर्नु पर्ने संसारकै गरिबतम मुलुकका अत्यन्त न्यून आयमा जीवन निर्वाह गर्न विवश जनतासमेत त्यसको प्रत्यक्ष मारमा पर्ने गरेकोलाई सरोकारवालाहरुले निरीह रुपमा स्वीकार्दै हवाई यातायातलाई अनुचित रुपमा महँगो बनाइनु खेदजनक छ ।

त्यसोत, वायुसेवा संचालनतर्फ विवेचना गर्दा हाम्रा वायुसेवा कंपनीहरुको स्थिति खासै सुदृढ देखिँदैन । तथापि, स्थापनाको चरणदेखिनै मानौं उनीहरुले कुनै व्यवसाय संचालन गरेको नभएर नोट छाप्ने मेसिन राखेकोभैँ गरी शोषणमा पर्छन् । फलत: सीमित केही अपवादबाहेक निजी वायुसेवा कम्पनीहरु पनि दिगो रुपमा संचालित हुन

मोहन अधिकारी
पूर्व निमित्त महानिर्देशक, ने.ना.उ.प्रा.

नसक्दा बन्द हुने र थपिन रहर गर्नेहरुको संख्या उस्तैउस्तै देखिएको छ । यदि, यहाँ उड्डयनको स्कोप छैन भन्ने हो भने खाडी क्षेत्रका यहाँ संचालित तमाम वायुसेवामध्ये सन् १९९३को अन्त्यमा स्थापित कटार एयरवेज अब बोइङ्ग ७८७बाट आफ्नो सेवा संचालन गर्ने प्रकियामा छ भने उ एक्लैले यहाँ दैनिक चार उडान भर्दा पनि भ्याइनभ्याइ भएर उडान थप्ने तरखरमा छ । तर, विगतमा अन्तर्राष्ट्रिय उडान भरेका हाम्रा वायुसेवा कंपनीहरु बन्द हुँदै गए । दुर्भाग्य, ५४ वर्ष पुरानो देशकै एकमात्र राष्ट्रिय ध्वजावाहक वायुसेवा कम्पनी यसरी थला परिसकेको छ कि उसले भूमिस्थ सेवा सञ्चालनको एकलौटी आधिपत्य नपाएको भए त्यहाँका कर्मचारीले तलब खानपनि धौंधौपर्ने निश्चित छ । विडम्बना, अन्तर्राष्ट्रिय उडानका लागि जहाज ल्याउन भनेर बैना पठाएबापत त्यसमा संलग्न पदाधिकारीले जेल सजाय भोग्नु परेबाट उक्त प्रकिया अद्यापि अवरुद्ध छ । यता, बल्लबल्ल आन्तरिक उडानका लागि जहाज ल्याउन गरिएको निर्णयसमेत विवादको घेरामा परेको छ । हुनत, वायुसेवालाई वाय्यान नभई नहुनेमा कसैको विमति छैन । तथापि, सो प्रकिया पटक-पटक अवरुद्ध हुनुमा नसुहाउँदो गरी हुने गरेको कमिसनको खेल हो भन्ने घामजत्तिकै छर्लङ्ग छ । त्यसैले, यहाँ प्रश्न उठ्छ रुग्ण संस्थाको दोहनबिना यथार्थ मूल्यमा जहाज ल्याउने व्यवस्था गर्नसक्ने नेपालीनै यहाँ छैनन् या त्यस्ता सपूत यहाँको

प्रणालिमा योग्यनै ठहरिंदैनन् ? यसको निक्यौलबिना वायुसेवाको स्थिति सुध्रिने र त्यसबाट पर्यटन प्रवर्धनमा टेवा पुग्ने अवस्था देखिदैन ।

उता, नागरिक उड्डयनतर्फ विमानस्थल निर्माण तथा संचालन पक्षको विवेचना गर्दा, नेपालका राजनीतिज्ञले शुरुदेखिनै आफ्नो क्षेत्रमा विमानस्थल निर्माणलाई भोट बैंकको रुपमा प्रयोग गर्दै आएको सर्वविदितै छ । फलतः १४७,१८१ वर्ग किलोमिटरको क्षेत्रफलमा सम्भवतः संसारकै कम औशत दूरीमा निर्मित ५५ विमानस्थलको अभिलेख तयार हुँदासमेत सो क्रम अद्यापि जारी छ । जबकि, यहाँ निर्मित अधिकाँश विमानस्थल स्थापित मापदण्डभित्र पर्दैनन् भने सीमित ७-८वटालेमात्र जेनतेन संचालन खर्च धान्नेपनि कुनै आत्मनिर्भर हुन नसक्दा यी विमानस्थलहरु नेपाल नागरिक उड्डयन प्राधिकरणका लागि ठूलै बोभ्न बनेका छन् । विडम्बना, आन्तरिक विमानस्थलहरुको यस्तो अवस्थाको बावजूद, पछिल्ला दिनहरुमात केही अपवादबाहेक मन्त्रालयको जिम्मा पाएका मन्त्रीज्यूहरुले आफ्नो क्षेत्रमा निर्मित विमानस्थललाई भटाभट अन्तर्राष्ट्रिय विमानस्थलको कोटिमा पुर्‍याउने घोषणा गर्नुको के तुक ? जबकि, यदि वहाँहरुमा वास्तविकता थाहा पाउने नियत र जिम्मेवारी बोधको भावना हुँदो हो त कम्तीमा आफू विभागीय मन्त्री भएकै बेलामा सही, देशकै एकमात्र अन्तर्राष्ट्रिय विमानस्थलधरि पूर्णतया संसारका स्थापित मूल्यमान्यता अनुसार सञ्चालन हुन नसकिरहेको तीतो यथार्थको ज्ञानसहित, दिगो र सफल विमानस्थल संचालन फगत कसैको लहड, चाहना या अनुचित दबाबको चानचुने विषय हुन नसक्ने अनुभूति गर्नुपर्ने हो । त्यसैले यदि सही पाठ सिक्ने नियत हो भने आगामी दिनहरुमा भोट बैंक र सस्तो लोकप्रियताका लागि विमानस्थलको संख्या थप्दै जाने होइन कि सञ्चालित उच्च प्रतिफलयुक्त विमानस्थलहरुलाई अन्तर्राष्ट्रिय नागरिक

उड्डयन संगठनको प्रावधान बमोजिम कुनै सम्भौताबिना प्रमाणित हुन सक्ने हैसियतमा पुर्‍याउनेतर्फ पाइला चाल्नु अपरिहार्य छ ।

यता, उड्डयन सुरक्षाको अभिलेख सन्तोषजनक नरहेको पुष्टि यहाँ पटक-पटक हुने गरेका हवाई दुर्घटनाबाट हुन्छ । मननीय छ कि यस सन्दर्भमा अक्टुबर २३मा युरोपियन कमिसनले नेपालमा इजाजत प्राप्त वायुसेवा कम्पनीहरुको सुरक्षा निगरानी विषयमा चासो राख्दै परराष्ट्र मन्त्रालयको प्रोटोकल शाखा, संस्कृति, पर्यटन तथा नागरिक उड्डयन मन्त्रालयका सचिव, नेपाल सरकारका मुख्य सचिवलगायतलाई बोधार्थ दिई नेपाल नागरिक उड्डयन प्राधिकरणका महानिर्देशकलाई पठाएको पत्रले मिडियामा रामै्र चर्चा पाएको थियो । वायुयान पनि युरोपियन देशमा निर्मित र त्यहाँका थुप्रै नागरिकको हताहतीलाई युरोपियन कमिसनले गम्भीरतापूर्वक लिदै पत्रमा नेपालले प्रमाणित गरेका अग्नि एयर, तारा एयर, बुद्ध एयर, सीता एयरका गरी विगत दुई बर्षकोबीचमा कम्तीमा ५ वटा वायुयानहरु दुर्घटनामा परेबाट थुप्रै युरोपियन नागरिकहरुलगायत ८९ जनाले ज्यान गुमाउनु परेको व्यहोरासहित विगतका दुर्घटनाहरुका सम्बन्धमा गठित दुर्घटना जाँच आयोगहरुले दिएका सिफारिसहरु र तिनको पालनाको अवस्था बारे पनि जानकारी माग गरेको थियो ।

साथै पत्रमा अन्तर्राष्ट्रिय नागरिक उड्डयन संगठनले २००९मा नेपालको अडिटका दौरान तोकिएका अन्तर्राष्ट्रिय सुरक्षा मापदण्डहरुमध्ये नेपालले ५७% भन्दा बढी मापदण्डहरु पूरा गर्न नसकेको, जसबाट विश्वका अन्य देशहरुको सरदर ४१% कमीकमजोरीको तुलनामा नेपालको अवस्था थप कमजोर रहेको र उक्त अडिटमा औल्याइएका केही कमीकमजोरीहरु पछि कम गरिएको भएता पनि मुख्य व्यवधानहरु सम्बोधन हुन बाँकीनै रहेको उल्लेख थियो । पुनश्चः, विद्यमान अवस्थाको सुधारका लागि नेपालले के कस्ता सुधारात्मक उपायहरु अवलम्बन गरिरहेको छ भन्ने विषयमा

नेपालबाट प्राप्त हुने प्रत्युत्तर पत्रको समीक्षापश्चात् आवश्यक परे नेपालका नागरिक उड्डयन अधिकारीहरुसँग ब्रसेल्समा छलफलका लागि प्रस्ताव गर्न सकिने जनाउसहित यसबारे युरोपियन कमिसनलाई १९ नोभेम्बर २०१२ भित्र जानकारी पठाउन अनुरोध गरेको थियो ।

सामान्य अवस्थामा निर्दिष्ट कार्यहरु अपेक्षित गम्भीरताकासाथ नगर्ने संस्कारका हामी नेपालीहरु साँच्चिकै अप्ठ्यारो परेपछि भने रामै्रसँग तात्न जानेका छौं भन्ने उपमालाई त्यतिखेर प्राधिकरणले पनि साकार पार्दै त्यस दौरान वायुसेवा कम्पनीहरु, मन्त्रालयका पदाधिकारीहरु, प्राधिकरणका पूर्व महानिर्देशकलगायतका विज्ञहरुसँगको छलफल र राय परामर्शपश्चात् प्राधिकरणबाट यसबीच भए गरेका प्रगतिको फेहरिस्तसहित निर्दिष्ट मितिभित्र प्रत्युत्तर पठाउने कार्य भयो । तर, सम्बद्ध मन्त्रालयको तर्फबाट सम्बोधन हुनुपर्ने कतिपय कार्यहरु अधुरानै रहेका छन् । तथापि, गनिमत छ हालसम्म युरोपियन कमिसनबाट थप कुनै प्रतिक्रिया प्राप्त भएको छैन । एक त विगतको तुलनामा केही प्रगतिसहितको विवरण प्रस्तुति, त्यसमाथि एउटा संस्था विशेषले कुनै सार्वभौम राज्यसँग कुनै विषयलाई कुन हदसम्म उचाल्न उचित हुने भन्ने प्रश्न तेर्सिन सक्नेलगायतका कारणले उ असमञ्जसमा परेको हुन सक्छ । यसलाई अब मुख बुजो लगाइयो अथवा उ सन्तुष्ट भइहाल्यो भन्ने अर्थमा बुभ्दै पूर्ववत कार्य सम्पादन गर्नु प्रत्युत्पादक हुनसक्छ । बरु, यसबाट पाठ सिकेर, विश्व प्रतिस्पर्धामा सदैव खरो उत्रिन सक्नुपर्ने मान्यता बोकेको यस क्षेत्रमा संलग्न सबैले आ-आफ्ना दायित्व निर्वाहमा कुनै कमीकमजोरी हुन नदिने अठोटसहितको कार्य सम्पादनद्वारा विद्यमान कमीकमजोरीलाई उचित रुपमा सम्बोधन गर्दै भविष्यमा कसैले औंलो ठड्याउन नसक्ने स्थितिमा पुग्नु सबैका लागि श्रेयस्कर हुनेछ ।

ICAO Universal Safety Oversight Audit Programme, Continuous Monitoring Approach (USOAP CMA) and States Obligation

Introduction

International Civil Aviation Organization (ICAO), the umbrella organization of the all nations throughout the world, plays the key role for the application of minimum standards needed for the operation of international and national air transportation. Chicago Convention, the constitution of the world civil aviation, clearly mentions on its first article that every state has complete and exclusive sovereignty over the airspace above its territory. The article reflects the obligation of every contracting state to maintain international standards for their air transportation services along with the compliance of all standards mentioned in the ICAO annexes. However for a long period of time the responsibility of monitoring and oversight had not been determined and there was no system of checking whether such activities were fully implemented or not? Recognizing the necessity of monitoring obligation the 32nd Session of the ICAO Assembly (Assembly Resolution A32-11) resolved establishment of the ICAO Universal Safety Oversight Audit Programme (USOAP), comprising regular, mandatory, systemic and harmonized safety audit of all contracting states. Accordingly the 35th Session of ICAO Assembly considered a proposal of the council for the continuation and expansion of USOAP as of 2005 and resolved that the programme be expanded to cover all safety related Annexes (A35-6).

Safety oversight is defined as a function by means of which States ensure the effective implementation of the safety related Standards and Recommended Practices (SARPs) and associated procedures contained in the annexes to the Convention on International Civil Aviation and related ICAO documents.

The objective of USOAP is to promote global aviation safety through auditing Contracting States, on a regular basis, to determine the capability of the States for safety oversight by assessing the effective implementation of critical elements of a safety oversight system and the status of States implementation of safety related ICAO Standards and Recommended Practices (SARPs), associated procedures, guidance materials and safety related practices.

Critical Elements of Safety Oversight System

Critical elements of safety oversight system are essentially the safety defense tools of a safety oversight system and are required for the effective implementation of safety related policy and associated procedures. States are expected to establish and implement safety oversight critical elements in a way that assumes the shared responsibility of the State and the aviation community. Critical elements of a safety oversight system encompass the whole spectrum of civil aviation activities, including areas such as flight operation, aerodromes, air navigation services, personnel licensing, airworthiness of aircraft, aircraft accident and/or incident investigation. The establishment and effective implementation of the CE is a measurable indicator of a State's capability for safety oversight. The following critical elements of a State's safety oversight system have been identified and defined by ICAO;

CE-1. Primary aviation legislation. The primary aviation legislation is the provision of a comprehensive and effective aviation law which is consistent with the environment, size and complexity of the State's aviation activity and compliant with the requirements contained in the Convention on International Civil Aviation.

CE-2. Specific operating regulations. The provision of adequate regulations to

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address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Convention on International Civil Aviation. For this purpose the term "regulations" is used in a generic sense to include but is not limited to instructions, rules, edicts, directives, sets of laws, requirements, policies, and orders.

CE-3. State civil aviation system and safety oversight functions. The establishment of a Civil Aviation Authority (CAA) and/or other relevant authorities or government agencies, headed by a Chief Executive Officer, supported by the appropriate and adequate technical and non-technical staff and provided with adequate financial resources. The State authority must have stated safety regulatory functions, objectives and safety policies. Here the term "State civil aviation system" is used in a generic sense to include all authorities with aviation safety oversight responsibility which may be established by the State as separate entities, such as: CAA, Airport Authorities, Air Traffic Service Authorities, Accident Investigation Authority, and Meteorological Authority.

CE-4. Technical personnel qualification and training. It includes the establishment

of minimum knowledge and experience requirements for the technical personnel performing safety oversight functions and the provision of appropriate training to maintain and enhance their competence at the desired level. The training should include initial and recurrent (periodic) training.

CE-5. Technical guidance, tools and the provision of safety-critical information.
The provision of technical guidance (including processes and procedures), tools (including facilities and equipment) and safety-critical information, as applicable, to the technical personnel to enable them to perform their safety oversight functions in accordance with established requirements and in a standardized manner. In addition, this includes the provision of technical guidance by the oversight authority to the aviation industry on the implementation of applicable regulations and instructions.

CE-6. Licensing, certification, authorization and approval obligations.
The implementation of processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a license, certificate, authorization and/or approval to conduct the relevant aviation activity.

CE-7. Surveillance obligations.
The implementation of processes, such as inspections and audits, to proactively ensure that aviation license, certificate, authorization and/or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State to undertake an aviation related activity for which they have been licensed, certified, authorized and/or approved to perform. This includes the surveillance of designated personnel who perform safety oversight functions on behalf of the CAA.

CE-8. Resolution of safety concerns.
The implementation of processes and procedures to resolve identified deficiencies impacting aviation safety, which may have been residing in the aviation system and have been detected by the regulatory authority or other appropriate bodies. This would include

the ability to analyse safety deficiencies, forward recommendations, support the resolution of identified deficiencies, as well as take enforcement action when appropriate.

Audit Protocols

Audit protocols are used by the CMO to determine the state capability in an ongoing basis and/or during the conduct of the on-site audit. It provides both the auditors and the State with a step-by-step guide to verify the status of implementation of the various elements being audited ensuring transparency, consistency and standardization. It allows the auditors to determine if the requirements and practices of the State comply with, conform with, or adhere to, the requirements of the Convention, Annex provisions, and ICAO guidance material.

The following eight audit areas have been identified in the USOAP CMA to access the state capability of safety oversight system addressing all eight critical elements. These protocols have addressed Chicago Convention, all safety related annexes, associated procedures etc.

1) primary aviation legislation and civil aviation regulations (LEG); Legislation includes promulgation and amendment procedures, status of implementation and differences to ICAO SARPs, enforcement mechanism and its effectiveness, empowerment of inspectors, ratification and implementation of Article 83, rules of the air, units of measurement to be used in air and ground operations and accident and incident investigation.

2) civil aviation organization (ORG); Civil aviation organization highlights the establishment and financial resources of Civil Aviation Authority to effectively carryout the safety oversight function, qualifications of technical personnel and training and technical guidance, tools and the provision of safety critical information

3) Personnel licensing and training (PEL): Personnel licencing is a state functions, enabling it to comply with conventions and annex 1. Under this audit area focus has been given on specific operating regulations regarding personnel licensing, status of

implementation of, and differences from, ICAO SARPs, organization and staffing of the personnel licensing and training system, personnel licensing office equipment, procedures established for personnel licensing and rating, processing of the medical assessment, control and supervision of licenses and ratings issued, language proficiency requirements, control and supervision of training organizations etc.

4) Aircraft operations (OPS); Most important activities within the scope of aircraft operation is the implementation of the requirements for obtaining an AOC which is a basis for the sustainability of air operators. Despite the regulation relating to AOC, regulations for aircraft operations, organization and staffing of the aircraft operations organization, availability of qualified technical personnel and training, control and supervision of aircraft operations-delegation of authority, aircraft operations technical guidance and equipment, procedures for the certification, control and supervision of aircraft operations, it's follow-up on deficiencies and enforcement procedures are equally important for the efficacy of the activities.

5) Airworthiness of aircraft (AIR); Airworthiness of aircraft has always been considered by ICAO to be a key element for the safety of international civil aviation. This is reflected in the Convention which gives particular emphasis to the issuance and validation of certificates of airworthiness according to approved standards. Regulations for airworthiness of aircraft, organization, staffing and training ,aircraft registration, noise certification, type certificate validation or acceptance, approval of modifications and repairs, lease agreements, charters and interchange State of Registry Continuing Airworthiness responsibilities of aircraft, approval of maintenance organizations, certificate of airworthiness issuance/renewal, special flight authorization are the main area of concern in this protocol area. This area covers annex 6 and 8.

6) aircraft accident and incident investigation (AIG); Another protocol area is aircraft accident and incident investigation which includes but not

limited to: regulations for accident and incident investigation, organization and staffing of the accident investigation authority, facilities, equipment and procedures established for the investigation of accidents and incidents, procedures related to the conduct of investigations, procedures related to the participation in investigations conducted by other States, completion and release of the final report, safety recommendations, accident and incident prevention measures.

7) air navigation services (ANS); ANS covers ICAO Annex 2, 3, 4, 5,10, 11, 15 and basically deals with regulations for Air Traffic Services, organization and staffing of Air Traffic Services, licensing and training of Air Traffic Services personnel, Air Traffic Services personnel-Service provider establishment of Air Traffic Services, coordination, emergency events and contingency planning, Air Traffic Services Safety Management programmes, Air Traffic communications requirements, Air Traffic information requirements.

8) Aerodromes and ground aids (AGA): Article 15 of Convention requires that all aerodromes open to public use under the jurisdiction of a States provide uniform conditions for the aircraft of all other contracting states which is normally achieved by the certification of an aerodrome. To fulfill the aerodrome certification responsibilities and meet the requirements set forth in the Convention and in Annex 14, it is vital that States establish an effective aerodrome certification system. To perform these activities States need to develop regulations, organization & staffing of an aerodrome, provision of aerodrome certification, aerodrome data and coordination, physical characteristics, facilities and equipment, markings and signs, lighting, maintenance, aerodrome operational services, and development and implementation of safety management system.

The Continuous Monitoring Approach (CMA)

The 37th Session of the Assembly (28 September – 8 October 2010) adopted Resolution A37-5, affirming that the evolution of USOAP to the CMA

should continue to be a top priority for ICAO to ensure that information on the safety performance of Member States is provided to other Member States and to the travelling public on an ongoing basis. USOAP CMA is designed to monitor the safety oversight capabilities and safety performance of States on a continuous basis which provides a mechanism for ICAO to collect safety information from Member States and other stakeholders and be able to analyze received information using a risk-based approach to identify and prioritize appropriate activities. The four components of USOAP CMA viz. safety information collection; determination of State safety risk profile; prioritization and conduct of USOAP CMA activities; and update of the Lack of Effective Implementation (LEI) and the status of SSCs enable ICAO to monitor the safety oversight capabilities of Member States on a regular basis.

Member States are the primary sources of safety related data collection therefore USOAP CMA provides a mechanism for collecting safety data and information by completing, submitting and updating a State Aviation Activity Questionnaire (SAAQ); Compliance Checklists (CCs), the Electronic Filing of Differences (EFOD) system may be used); and the USOAP CMA PQs. Furthermore, implementation of State Safety Programmes (SSPs) will also provide relevant safety data in support of the USOAP CMA because as SSPs evolve, they will generate additional safety data that will be used to enhance the effectiveness of the USOAP CMA.

Under the CMA, the USOAP will carry out a variety of intervention activities such as Comprehensive System Approach (CSA) audit, limited CSA audits, safety audits and ICAO coordinated validation missions (ICVMs). These activities will provide the USOAP with enhanced flexibility and enable ICAO to tailor interventions to respond to the situation and needs of each State. The CMA will also allow ICAO to identify when other types of interventions, such as technical assistance, are required. In order for ICAO to determine what type of intervention activity is appropriate for each State, continuous feedback from States will be necessary under the CMA.

States obligation under USOAP CMA programme

Signing of Memorandum of Understanding(MOU): MOU signed

between each Member State and ICAO establishes the official agreement outlining the terms and responsibilities of the Member State and ICAO in the effective implementation and maintenance of USOAP CMA and conduct of USOAP CMA activities. Member States must sign a MOU with ICAO to confirm their full support of the USOAP CMA process and to commit to actively participating in all USOAP CMA activities, including the provision of information through the CMA online framework. Each Member State are responsible to facilitate USOAP CMA on-site activities by making appropriate staff from its CAA, or other relevant entities, available for interview by the USOAP CMA mission team, as required. Each State will also facilitate the work of the USOAP CMA mission team by providing all necessary resources, documents, information, administrative and support functions.

Allocation of Resources and secondment of auditors: Member States are also responsible to allocate adequate resources to fulfill, all the conditions of the MOU. States are encouraged to enter into agreements with ICAO for long- or short-term secondment of auditors and SMEs for USOAP CMA activities.

Appointment of National Continuous Monitoring Coordinators (NCMCs): One of the important obligations of states is to nominate one or more qualified NCMCs to act as primary points of contact for all USOAP CMA processes and activities. Basically he/she is responsible for maintaining and updating the information to be provided by the State to the Continuous Monitoring Office (CMO) on an ongoing basis. NCMCs should provide and update State Aviation Activities Questionnaires (SAAQ), Compliance Checklists with the ICAO Annexes (CCs), States response to Protocols Questions (PQs) and Mandatory Information Requests (MIRs), mitigation measures taken by the States in response to Significant Safety Concerns (SSCs), the latest information regarding the implementation of States Safety Programme (SSP) and other relevant safety information requested by ICAO. Furthermore the NCMC is responsible to coordinate the completion and ongoing update of the CCs in order to provide the CMO with information

regarding the implementation of provisions of the relevant Annexes to the Convention. Compliance Checklists can be uploaded to ICAO Electronic Filings of Differences (EOFD) system to accomplish this task. As agreed in the Memorandum of Understanding (MOU), the NCMC coordinates the development and submission of an acceptable Corrective Action Plan (CAP) to the CMO resolving Findings and recommendations (F&Rs) during CMA activities within the specified timeline from the date of the official issuance of an F&R. If SSC identified and the State is notified, the NCMC promptly coordinates the

development and submission of acceptable mitigating measures to the CMO in response to the SSC.

Conclusion

To effectively carry out the safety oversight activities within the area of jurisdiction, Civil Aviation safety authority shall proactively be involved in the introduction of SARPs in legal framework, incorporation of Annex amendments and notification of differences, oversight of delegated tasks, establishment of staff qualifications and experience and development of training programmes,

coordination amongst entities responsible for safety oversight, separation of the regulatory and service provision functions etc.

References

- ICAO Doc 7300: Convention on International Civil Aviation
- ICAO Doc 9734: Safety Oversight Manual, Part A : The Establishment and Management of States safety Oversight System.
- ICAO Doc 9735: Universal Safety Oversight Audit Programme, Continuous Monitoring Manual.

Fire fighting exercise at TIA.

Facilitation and Airport Operation

Facilitation, in the context of civil aviation, refers to a wide range of issues and activities, as well as the development of Standards, in connection with the clearance of aircraft, people and goods through the formalities required at international borders. The phrase "facilitation of formalities" appears as a subtitle for Article 22 of the Convention on International Civil Aviation (Doc 7300). Article 22 obliges States to "... adopt all practicable measures, through the issuance of special regulations or otherwise, to facilitate and expedite navigation by aircraft between the territories of contracting States, and to prevent unnecessary delays to aircraft, crews, passengers and cargo, especially in the administration of the laws relating to immigration, quarantine, customs and clearance. In the civil aviation community facilitation is of interest to four major groups such as states ,operators, airports and customers, each having a somewhat different priority although the interest do overlap.

Purpose of facilitation

The primary interest of States is full compliance with their laws and regulation. States establish rules aimed at enforcing national laws dealing with cross-border movement of persons and goods, through which particular control procedures and practices are adopted for adequately equipping border-control authorities. Transport, in general, and specifically air transport, is subject to a series of restrictions which could negatively affect not only air navigation activities, but also inbound/outbound traffic flows and the performance and development of other dependent economic activities, such as international trade, tourism and services. Border controls that initially were outlined to protect national interests can become restrictions that slow down a State's development due to the economic impact added transportation and storage costs incur, as well as costs induced by inefficient processing activities. Since national laws and regulations are assigned to, and applied by, specific public authorities and may differ depending on each State's internal

organization. The vital interest of the operators is increasing productivity by minimizing the cost of operational delays and administrative procedure. Airports are interested in facilitation in order to reduce congestion in the passenger terminals and in the cargo sheds. The fourth group the customers of air transport such as passengers and cargo shippers want quality service, which means being allow to proceed through airports with minimal delay and difficulty. Users will find guidance material related to the Standards and Recommended Practices of Annex 9 — Facilitation, grouped by specific facilitation subjects (i.e. aircraft, passengers, baggage, and goods) and "functions" performed in international airports.

Facilitation work should support the following objectives:

- increase the level of knowledge of facilitation issues and concepts;
- improve the results of facilitation programmers in States;
- And increase conformance with Annex 9.

The facilitation should cover both an instructional and a reference tool. As an instructional tool, it contains the information and actual elements needed for preparing and delivering training sessions. It should be used as a reference tool by trainers and trainees during and after the completion of a training session.

Establishment of National Air Transportation Facilitation Committee

National Air Transportation Facilitation Committee of Nepal has been formed in ad-hoc basis by Nepal Government under the provision of ICAO Annex-9 with following composition for the purpose of coordinating facilitation activities between departments, agencies and other organizations responsible for, various aspects of international civil aviation as well as with airports and aircraft operators.

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Director, CAAN Head Office

The Convention on International Civil Aviation, 1944

The Convention on International Civil Aviation (also referred to as the "Chicago Convention") is the basis of the development of ICAO's Facilitation (FAL) Programme, in general, and Annex 9, in particular.

The Annex describes the obligations of Contracting States under Articles 22, 23 and 24 of the Chicago Convention and the standardized procedures for meeting the legal requirements referred to in Articles 10, 13, 14, 29 and 35. Some of these Articles describe the obligations of customers and business entities in the aviation community, while others denote the obligations of Contracting States. Set forth below are the substance of these provisions:

Obligations of aviation community members

Article 10 "... Every aircraft which enters the territory of a contracting State shall, if the regulations of that State so require, land at an airport designated by that State for the purpose of customs and other examination ...." This text recognizes the responsibility of aircraft to land and submit to examination where and when required.

Article 13 "The laws and regulations of a contracting State as to the admission to or departure from its territory of passengers, crew or cargo of aircraft, such as regulations relating to entry, clearance, immigration, passports, customs, and quarantine shall be

complied with by or on behalf of such passengers, crew or cargo upon entrance into or departure from, or while within the territory of that State."

Article 29 "Every aircraft of a contracting State, engaged in international navigation, shall carry the following documents in conformity with the conditions prescribed in this Convention:

a) If it carries passengers, a list of their names and places of embarkation and destination;
b) If it carries cargo, a manifest and detailed declarations of the cargo."

Article 35

"a)   No munitions of war or implements of war may be carried in or above the territory of a State in aircraft engaged in international navigation, except by permission of such State.

b)   Each contracting State reserves the right, for reasons of public order and safety, to regulate or prohibit the carriage in or above its territory of articles other than those enumerated in paragraph a): ..."

This text recognizes the right of Contracting States to require licences for prohibited or restricted articles other than those enumerated in subparagraph a).

Obligations of Contracting States

Article 14 Contracting States agree to take effective measures to prevent the spread by means of air navigation of communicable diseases and to keep in close consultation with the agencies concerned with international regulations, e.g. the World Health Organization.

Article 22 Contracting States agree to adopt all practicable measures to expedite navigation by aircraft and prevent unnecessary delays, especially those due to administration, customs, immigration, clearance and quarantine formalities.

Article 23 Contracting States agree to develop effective customs and immigration procedures.

Article 24 Contracting States agree to provide duty exemptions under certain conditions, for aircraft, parts, supplies and equipment.

Article 37 Obligates Contracting States to "... collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures, and organization ... in which such uniformity will facilitate and improve air navigation." In effect, this Article authorizes the concept of Annexes to the Convention, including one to contain standards and recommended practices for customs and immigration procedures. This document is Annex 9 — Facilitation.

Article 38 Obligates Contracting States to notify ICAO of differences between their national practices and the Standards in the Annexes. ICAO publishes these differences and distributes them to Contracting States as Supplements to the Annexes. Additional mandates for the ICAO FAL Programme are contained in Assembly Resolutions. Some of these Resolutions can include policy statements relating to the following:

1. Development of facilitation provisions, including Annex 9 — Facilitation; Machine Readable Travel Documents (Doc 9303); and International Signs to Provide Guidance to Persons at Airports and Marine Terminals (Doc 9636);

2. Implementation of Annex 9 Standards and Recommended Practices, and notification to ICAO of differences with national policies and practices; and

3. International cooperation in protecting the security and integrity of passports, including efforts to prevent passport fraud.

Rules and Regulation related to Facilation and Airport Operation

International:

- International Civil Aviaton Convention Doc 7300
- ICAO Annex-9 and other related documents
- International Health regulations 2005
- Custom
- Postal
- Other

National:

- Civil Aviation Act,2015 (1959)
- Civil Aviation Authority Act,2053 (1996)

- Civil Aviation Authority of Nepal, Civil Aviation Rules 2058 (2002)
- Civil Aviation Tariffs Rules 2038 (1981)
- Animal Health and Livestock Services Act, 2055 (1999)
- Passport Act, 2024 (1967)
- Customs Act, 2064 (2007)/Customs Regulations 2007
- The Immigration Act, 2049 (1992)
- Provisions of Immigration Regulation -1994
- Narcotic Drugs (Control) Act, 2033 (1976)
- Other

Conclusion

Although the world air traffic once again is growing rapidly after recovering from the shock of 9/11 and other terrorist attacks, the recovery is fragile, reflecting the state of the world economy. At the same time, customers demand the improvement of facilitation and quality of service provided. Airports are an integral part of the entire travel chain. Air passenger should have a seamless travel experience during their entire journey, including surface transport to and from airports. Passengers and shippers, where they have a choice, will tend to choose the airports, airlines, and routs which give the best quality of service. Airport operators have an interest in the development of service quality standards for the whole airport. In addition to the challenges of harmonizing objectives within the civil aviation community, we must contend with the external challenges of unlawful interference, illegal migration, illicit narcotics trafficking, and contagious disease, all of which can jeopardize the facilitation programme, if they are not kept under control. These problems have become global threats and are everyday realities. Specifically, facilitation is the continuous improvement of control processes and service procedures. It requires a high degree of cooperation among the different sectors of the community (airline operators, service providers, airport authorities, and inspection agencies), each of which has a responsibility to contribute to such improvements.

References

- International Civil Aviaton Convention Doc 7300
- ICAO Annex-9 and other related documents

SSP: Management of Safety in the State

Safety concept

The concept of safety has also matured with the changing pace of time. Safety was once considered like the centre of an orbit, revolving around which all other business activities were supposed to function. Various logics were presented to justify the absoluteness of safety in risk associated business. Human desire anticipating a risk free and controlled activity or system might be the root cause behind this logic. In reality, absolute safety is generally an unachievable goal in open and dynamic operational environment. When there is the involvement of human being, the error is inevitable.

This is undisputed fact that all aviation organizations have a business component. Aviation is a socio-technical system where people actively and closely interact with technology to achieve production goal through delivery of services. The new safety concept accepts the approach of a proper balance between protection (safety) and production (service delivery) for a successful and sustainable run of a business. Based on this philosophy the concept of acceptable safety has been adopted in risk bearing industries, including aviation.

State Safety Programme

ICAO has made mandatory provisions for the States to establish a State Safety Programme (SSP) so as to achieve an Acceptable Level of Safety (ALoS) in aviation. ICAO safety management SARPs contained in Annex 1, 6, 8, 11, 13 and 14 is aimed at two audience groups i.e. States and service providers. The regulatory body represents the State and other organizations involved in the aviation activities for the purpose of delivery of services are considered as the service providers. Accordingly, the regulatory body of the State is required to establish SSP and service provider organizations are required to implement Safety Management System (SMS) with an objective of Accepted Level of Safety (ALoS) in its aviation activities.

The SSP is an integrated set of regulations and activities aimed at improving safety in a State. SSP describes the arrangements of the management of aviation safety in a State. It is a package of state civil aviation system that includes policy, legal framework, organization and mechanism available in a state for the maintenance of acceptable level of safety. Safety Policy and Objective, Safety Risk Management, Safety Assurance, and Safety Promotion are the four components of SSP framework. Under these four components, there are eleven other elements in SSP. Safety Risk Management and Safety Assurance are two basic safety management activities that perform under the umbrella of Safety Policy objective and Safety Promotion. ALoS is the expression of the minimum degree of safety established by the State and it is assured by an SSP through the safety performance of service providers as agreed in their SMS.

Policy guideline on aviation safety in Nepal

The Civil Aviation Policy, promulgated by Government of Nepal in 2007 incorporates specific provision for enhancing safety in Nepalese civil aviation. The goal of this policy is the development of air transport system with a liberal sky policy ensuring private sector participation, so as to make air services in Nepal safe, reliable, standard, and easily accessible to the general public. In order to achieve this goal, the policy has laid down various objectives while ensuring the highest standards of aviation safety and security. More specifically, Clause 4.3 of the policy clearly states that top priority will be accorded to the compliance of the Standards and Recommended Practices (SARPs) of the International Civil Aviation Organization (ICAO) for the enhancement of flight safety. It further states that the safety oversight capacity will be strengthened by developing required institutional and legal infrastructure. Additionally, Clause 4.17 of the policy states that the Civil Aviation Authority of Nepal (CAAN) shall be strengthened as an efficient aeronautical regulatory authority to effectively carry out the activities of

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regulation, control and expansion of the civil aviation sector.

Establishment of SSP in Nepal

Ratification of the Chicago Convention of 1944 places the obligation of implementing the SARPs to the Convention as per Article 37. The civil aviation acts and associated regulations confer on CAAN the obligation to issue necessary requirements, directives, manuals and documents for the systematic implementation of ICAO SARPs. For the implementation of the requirements of safety management contained in ICAO SARPs, the Civil Aviation Authority of Nepal (CAAN) has promulgated the State Safety Programme, Nepal (SSP Nepal), 2012 under the power conferred by Rule 81 of Civil Aviation Rules, 2052 (1995).

As the regulatory body of civil aviation in Nepal, CAAN is also responsible for the establishment, maintenance and continuous improvement of the SSP. The CAAN is responsible to develop requirements and specific operational policies that build upon sound safety management principles in active consultation with all stakeholders. CAAN shall also endeavor to allocate sufficient resources for discharging its safety oversight responsibilities effectively. Civil Aviation Authority of Nepal is currently responsible for all the Annexes to the Convention on International Civil Aviation except Annex-3 and Annex-13. The Director General of CAAN is the person with full financial, administrative and regulatory authority of the organization. Therefore the Director General of CAAN has been designated as the Accountable

Person of the SSP. The director general of the CAAN is responsible for the implementation, operation and the supervision of the SSP and coordinate, the activities of the various state aviation organizations as necessary under the SSP.

SSP implementation needs a coordinated approach

The SSP implementation is a coordinated approach that requires the involvement of all safety related organization within and outside CAAN. For this purpose a high level safety coordination mechanism is essential for the overall evaluation of the SSP implementation, review of safety risks, determine the acceptable level of safety, suggest respective organisation on the SMS matters and continuous improvement of the SSP.

The SSP Nepal has designated National Aviation Safety Team (NAST) as a high level body for the coordination on safety issues among the safety partners so as to suggest necessary measures to address the issues. The Team comprises the representations from the regulatory body, operators and service providers. NAST is also responsible for evaluation and suggestion on the SSP implementation. NAST also deals with the safety issues of the State under the COSCAP-SA mechanism.

CAAN has developed a three year plan for the phased-wise implementation of the SSP. Phase one and phase two are the preliminary stages of the SSP implementation plan. Phase three should be initiated only after the evaluation of the progress made on phase one and phase two. The implementation of the SSP is not an easy task to the State. In every Phase of implementation, there are a number of issues that needs to be addressed through the proper coordination, cooperation and trust among the partners of the SSP.

ALoS a difficult task to establish

Establishment of ALoS is a not an easy task in the context of varying size, operational nature and operational complexity of service providers. There are certain specific challenges those are applicable uniformly among the Member States. ALoS is defined individually for each operator or service provider on the basis of the target level of safety set by the regulator. In practical operational

environment, safety standards may vary among operators to operators. While establishing initial ALoS, for example the aircraft accident rate, keeping all operators in a single basket may not be justifiable to those having higher safety records.

ALoS is defined on the basis of the target level of safety set by the regulator. While determining the ALoS, State will have to assign a specific number of accidents as a safety target based on the past data. In this situation, it will be very hard to convince travelling public about the acceptance of an accident as the target in the future.

SSP implementations challenges in Nepal

Despite some generic challenges, there are also some country specific challenges for the implementation of the SSP as an effective tool to manage the overall level of safety in a State. Some of these challenges can be summarized as follows:

- The effective implementation of SSP depends upon the SMS status of service providers. At present, only a few operators and service provider has implemented the SMS, and it is still in a very initial stage. There is not any proper mechanism to evaluate the SMS implementation in service providers.
- The availability of safety data is the key element for the effective implementation of SSP. There are only a limited data available in the part of airline operations under mandatory reporting system. Aerodrome and ANS is still out of the coverage of mandatory reporting mechanism. Even the available data are not being properly processed and evaluated. Voluntary Reporting System, though introduced, is not being able to attract potential reporters.
- Enforcement is almost not existent in our context. Vested interests and interference from power centers coexist in under developed countries, which is a very dangerous trend for aviation safety. The CAAN has introduced enforcement manual in the areas of aircraft operations but due to proper legal backing its implementation can be challenged. Aerodrome and ANS are the areas which are outside of the enforcement policy due to the incapacity of the CAAN to regulate the areas within its functional domain.

- Regulation of the service provider functions under the CAA Nepal itself is a difficult task. Though the CAAN organization structure has been revised to make functional separation between regulatory and service provider functions, oversight of aerodrome operations and air navigation services is almost not functioning.
- Safety reporting system is almost non-existent in CAAN. SMS is implemented in the areas of certified aerodromes and in some airline operators. But there is not a proper evaluation mechanism of its implementation status.
- The ICAO course may provide a Macro level understanding of SSP and SMS but it is not sufficient to make the pole understand the depth of the issues arising from converting from compliance based to performance base system.

Lack of resources in the part of small operators is also found to be as the major hurdle for the effective implementation of safety management system. The CAAN so far as unable to introduce any specific guidelines for SMS provision to small operators.

Conclusion

Philosophically, Safety Management System is considered as a panacea for the maintenance of required level of safety in a State. But, in practice, it is a very complex and complicated system to be implemented in real field scenario. SSP is the initial implementation stage in most of the countries. There are some generic issues those are uniformly applicable to all States. There might be some confusion or lake of knowledge or expertise regarding the understandings of some key elements of SSP. ICAO is in its final stage in the process of promulgation of new Annex i.e. Annex-19 which dedicatedly related to the safety management. Let we hope the new Annex will provide a clear guidance regarding some generic issues which are still to be resolved. However, more coordination, cooperation and trust among all the aviation stakeholders is essential to resolve the country specific challenges ahead for the effective implementation of SSP in Nepal.

References
- Civil Aviation Authority of Nepal Act, 1996
- Civil Aviation Rules, 1995 (amendment 2002)
- Civil Aviation Policy, 2007
- ICAO Safety Management Manual (Doc 9859)
- State Safety Programme, Nepal, 2012

Kathmandu : Venue of International Birds' Conference in 2013

Ramesh Man Joshi
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(A scenario at the International Conference of Birds)

Moderator -

We are at the end of the last agenda of the plenary session of this International Birds' Conference, that is, 'Selection of the Venue for 2013."

The "Selection Committee" has studied the possibility of three various locations for the venue. Representatives from first alternate, that is, "Neverland", and second alternate, that is, "Yourcity" have already presented their justifications for holding this conference in 2013 in their countries. Now I request the representative from Nepal to present the justification as to why Kathmandu, should be selected as the venue for 2013 conference.

Representative from Nepal

Thank you, Moderator.

Respected Chair-bird, Respected Representatives from all the Bird species, I now present the justifications for selecting Kathmandu, the capital of Nepal, as the venue for holding the conference in 2013.

Voice from the Floor

Where is Nepal? Is it in Italy?

Representative from Nepal

No, you fool. Nepal is a very beautiful country in Asia, geographically sandwiched between China in the north and India in the south. Area-wise it is much smaller than China or India. But, we boast proudly that, out of the 10,000 variety of our family, I mean the bird family, in this world, 871 varieties dwell in this country alone. And climatically it is just nice here, not too cold in the winter and not too hot in the summer.

Kathmandu, the capital, is surrounded by green mountains of height varying between 5,000 feet and 10,000 feet above mean sea level and criss-crossed with perennial rivers. Kathmandu valley has the privilege of recording more than 500 varieties of us-birds so far. So much so that human beings there have advertised in their leaflets to promote human tourism that Kathmandu is a bird watchers' paradise.

Here, you get the bonus of having the pleasure of roaming over the solid or liquid waste spread openly all over the valley (yes, people here throw all kinds of waste just anywhere they like, anytime of the day or night). It is a treat to your stomach or nose or tongue for that matter. Besides, there is a big airport right in the middle of the valley with a lot of open airspace over the asphalt and the cement concrete surface which, when gets heated-up in the day, gives a real treat to those of us who want to have a free joy-loafing in the thermal built as a result of the heat-up.

Additionally, Teku, the open waste collection and clearance depot of Kathmandu Metropolis, is right in the middle of this valley, a good source of food for birds of prey.

Question from the Floor:

Is it not true that law of Nepal forbids slaughtering or sale of meat or throwing of carcasses openly within 3 Km from the airport?

Representative from Nepal:

Yes, but people here just don't care about it anyway.

Kathmandu, not too long ago, had more stone idols of gods than its population. Virtually every temple has a canopy with numerous support beams like the spikes of an umbrella which is a good place for perching and shelter. People offer rice and other grains to these stone idols every morning. But they always end up in our stomachs.

Sysdol Landfill Site in Okharpauwa, 15 Km away, "as the crow flies",   (I wonder why birds are so honoured by the human being), is being used as a resort by the preying specy of our

family, such as, vultures, because of the odour continuously being emitted from the leachet produced at the site, thanks to its construction design faults. But, the warning is that the altitude where we enjoy roving over this place gets some of the domestic aircraft flights bound to Kathmandu. Beware.

Vultures and other carnivorous birds can also have the pleasure of visiting the only birds' resort, called "Vultures' Restaurant", formally established by the people's community of Nepal in a place called Pithauli of Nawalparsi, not very far from Kathmandu and fill their palate to the full satisfaction.

Somebody from the Floor:	But I hear that Kathmandu Airport is renowned as a Danger Zone for us. Those (birds, not aircraft) who dare to fly in the airport area, may be dealt with instantly by the sharp-shooting human hunters without prior warning, not to speak of their guts to apply all those pyrotechnic lights or firing of gas cannons or sharp wailers, that is, sonic repellers, etc. installed to harass us. They have, so called, scare-crows too. But they only scare us. They are not really harmful to us.
Representative from Nepal	Yes, what you said are all true. I will say, people at this airport are very notorious in this regard. Yes, it is also true that, they keep a continuous watch for our presence for fear that, lest we come, their aircraft flights may hit us or vice versa. They leave no stones unturned to scare us away. Nevertheless, it has greatly reduced the rate of death of us-birds due to aircraft strikes. Earthworms are found in abundance on the runway in winter which is another delicacy for us. A big bonus for you will be ever present mouth as well as nose-watering smell of the effervescence coming out of the barbeque of goat's meat at this airport region which is a delicacy for our (bird's) family of prey.
Question from the Floor	Will the bar-be-cue be still there? And I understand, they are now using insecticides such as binomyl, etc. to stop earthworms from getting them onto the runway. Is it true?
Representative from Nepal	Well, the bar-be-cue sellers have been there since decades. Probability is that they will very much be there next year too. As to the earthworms, airport personnel have been cruel to them. But they have not been totally successful in their attempt to eliminate the earthworm problem. Besides, people in this country have great love as well as respect for birds. They put some food outside their room or on the roof-top everyday immediately after offering them to their departed fore-fathers who never come to eat them anyway. And, they offer really fresh or warm food just for us on a particular day called "Crow Day" (Kag Puja).
Voice from the Floor	I hear that one of us was killed instantly when it was hit by the tail of a Dornier (Do-226) aircraft at Kathmandu Airport last September.
Representative from Nepal	Yes, that seems to be the case. But, let us take solace that 19 human beings also were killed in the crash that took place within 2 minutes of the hit. Yes, you are advised to avoid the airport area even though it has many attractions for us. The cause of the crash is not known yet. The investigation is still "on". I don't think that a hit in the tail of that Dornier could have led this accident. Moreover, the airport authorities have geared up all of its weapons against us since then. But, why be afraid? The rest of the valley is still a paradise for us. Thank you.
Chair-bird	Now I have the pleasure of announcing the result of the venue selection process. Kathmandu, the capital of Nepal, has been overwhelmingly preferred as the venue for our next conference. This conference of 2012 is now formally concluded. Long live the Birds. (A big applause from the floor.) Let us all meet again in Kathmandu in 2013. Good-bye till then.

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Fatigue Risk Management

Fatigue is defined by ICAO Annex 6 Part I as a physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness and/or physical activity that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety related duties.

Fatigue is a threat to aviation safety because of the impairments in alertness and performance it creates. Fatigue is also defined as "a non pathologic state resulting in a decreased ability to maintain function or work load due to mental or physical stress". The term is used to describe a range of experiences from sleepy or tired to exhausted. There are two major physiological phenomena that have been demonstrated to create fatigue: sleep loss and circadian rhythm disruption.

Fatigue in general is a feeling of lack of energy and motivation that can be physical, mental or both. Fatigue is not the same as drowsiness, but the desire to sleep may accompany fatigue. Fatigue is described using various terms including weary, tired, exhausted, malaise, listless, lack of energy and feeling rundown etc.

Fatigue can also occur in normal individuals who experience intense physical or mental activity or both. However, in contrast to fatigue that occurs with some diseases and syndromes, normal fatigue in healthy individuals is relieved quickly --in a few hours to about a day, when the physical or mental activity caused fatigue is reduced. Moreover, people occasionally experience fatigue after eating (sometimes termed as postprandial depression) which can be normal response to food --especially after meals which may last about 30 minutes up to several hours.

Although human element—which can be influenced by many factors-- is the most adaptable component in aviation system to affect human performance such as fatigue, health and stress. These factors are affected by environmental constraints like temperature, noise, light, vibration, working hours and work load. Fatigue can occur in normal healthy individuals as a normal response to physical and mental exertion. However, normal fatigue may begin to become abnormal if it becomes chronic, extreme or prolonged fatigue, usually this occurs when a person experiences chronic or prolonged physical or mental exertion. Unusually hard physical or mental exertion for one day can onset normal fatigue that may last about a day or sometimes more, depending on the exertion level, while daily usually hard physical or mental exertion may result in prolonged fatigue usually greater that 24 to 48 hours. The latter situation may develop into abnormal fatigue.

It is recognized that fatigue results from an accumulation of sleep loss. Sleeping is a vital physiological function like food or water. Sleep is necessary for survival. "Sleep loss" describes the phenomenon of getting less sleep than is needed for maximum working performance of alertness. Therefore sleep science supports a reduction in night time flight duty period of the crew because of the increased potential of fatigue risk. It is also an important consideration for people who have high tempo operations flying shorter missions.

The NTSB (National Transportation Safety Bureau) of USA cited some of their major accidents in which crew fatigue was a probable factor. Sleep deprivation experts noted that the current flight duty and crew rest rules of FAA (Federal Aviation Administration) USA are based on legacy fatigue and recuperation safety of physical labor. Such rules may be adequate to combat physical fatigue but are not appropriate to counter mental fatigue. Sleep and circadian rhythms are the two most important factors in predicting mental fatigue. Sleep is a vital physical need that is required for survival, alertness and performance.

The result of lack of sufficient sleep can be loss of attention and forgetfulness, lapses in decision making, slowed reaction times, reduced vigilance, poor communication, apathy, lethargy, mood swings and nodding off into micro sleep. According to sleep scientists flight crew needs to get 8 hours of sleep prior to

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starting a flight duty period, the pilots, be afforded 8 hours of sleep prior to starting a flight duty period to prevent flying with sleep debt. Sleep scientists also recommend that prior to starting the flight duty period the pilot, be afforded 8 hours of sleep opportunity in the same zone to which the pilots are adjusted. If the sleep opportunity occurs outside the crew's home time zone then the off duty period should be extended to assure that the crew can accumulate a total of at least 8 hours of night time sleep and regarding day time napping, naps of at least 2 hours can supplement continuous night time sleep.

Trans meridian flights in excess of tree time zones can result in significant circadian rhythm disruption. When circadian disruption and sleep loss occurs together, the adverse effects of each are compounded. "Cumulative duty times" are most fatiguing where there are flying days with minimal or near minimal crew rest periods. This can result in sleep debt, which requires additional time to overcome.

There is a well defined chronic fatigue syndrome recognized by specific criteria. Basically two sets of criteria need to be met to establish a diagnosis of chronic fatigue syndrome

01. Have severe chronic fatigue for at least six months or longer with other known medical conditions (whose manifestation include fatigue)

02. Currently have four or more of the following symptoms

➢ Past exceptional malaise
➢ Impaired memory or concentration
➢ Un-refreshing sleep
➢ Muscle pain
➢ Multi-joint pain without redness or swelling.
➢ Tender cervical or auxiliary lymph nodes
➢ Sore throat
➢ Headache

Fatigue, either mental or physical is a symptom that usually has some underlying causes. Fatigue may be described by people in different ways and may include some combination of the following (both mental and physical).

1). Weakness 2). Lack of energy 3). Constantly tired or exhausted 4). Lack of motivation 5). Difficulty concentrating and/or 6). Difficulty starting and completing tasks. Other few symptoms are fainting or loss of consciousness, near syncope, rapid heartbeat, dizziness or vertigo etc.

When flight crew members find themselves flying when fatigued several warning signals should alert them of a dangerous situation. These include:

• Eyes going in and out focus
• Head bobs involuntarily
• Persistent yawning
• Wandering or poorly organized thoughts
• Spotty near term memory
• Missed or erroneous performance of routine procedures

• Degradation of control accuracy

Research has shown that several countermeasures for fatigue are effective in improving alertness and performance. Long naps, 3-4 hours, can significantly restore alertness for 12-15 hours. Short or "power" naps of 10-30 minutes can help restore alertness for 3-4 hours. Allow 15-20 minutes after awakening to become fully alert before assuming aircrew duties. Other countermeasures include:

• Eat high protein meals (avoid high fat and high carbohydrate foods)
• Drink plenty of fluids specially water
• Caffeine can help counteract noticeable fatigue symptoms if awake for 18 hours or less.
• Rotate flight tasks and converse with other crewmembers.
• Keep the flight deck temperature cool
• Move/stretch in the seat, and periodically get up to walk around the aircraft if possible
• Gradually shift times for sleep, meals, and exercise to adjust to a new time zone

Pilot fatigue has been shown to be a hazard in commercial flight operations. Many factors contribute to fatigue in the commercial aviation environment. Circadian rhythm disruption, prolonged work schedules, inadequate crew rest, and inadequate restful sleep contribute to the potential for pilot fatigue. When the regulations regarding "rest" are compared to identified-requirements for "restful sleep," one can see that adequate restorative rest may not occur. Reviews

of federal research activities, hours of service/rest regulations, and airline company scheduling policies are needed to correct existing systemic problems. Enhanced pilot training is also needed to prevent fatigue, and to recognize it when it occurs so that effective countermeasures can be employed. Doing so will help insure that pilots fly adequately rested and alert thereby improving flight safety.

During COSCAP, RAST – Flight Operations and Air Traffic component meeting in Thailand on 18-20 June 2009 regarding Crew Fatigue Captain Bob Johnson, Boeing representative, presented that the key messages are that the traditional approaches to managing fatigue risk through the use of prescriptive time-based crew duty times are not effective in managing fatigue risk. The presentation shared information concerning the need for companies to develop fatigue risk management, and the need to implement it as an element of a Safety Management System. Fatigue Risk Management (FRM) approaches are based on scientific knowledge, whereas the traditional prescriptive regulation approach is not. Integration into the SMS permits the FRM to analyze existing data to assess the effectiveness of the FRM. For example, FOQA data can be used to assess the performances of the selected crew cycles.

Examples of scientific studies were provided to demonstrate that crews permitted to rest while en route were more alert during subsequent phases of flight. As per the meeting ICAO is reviewing the final guidance on the development of FRM.

A white sign of hope; the machine, landing beside the lap of a rugged mountain: awesome and dark one.

experimental conditions. On the basis of these results, and in an attempt to remedy the apparent deficiency in crew skills, additional training in flight deck management techniques has been introduced by some airlines. Following a period of experimentation and development, the techniques embraced by the new training became known collectively as CRM. The importance of the CRM concept and the utility of the training in promoting safer and more efficient aircraft operations have now been recognized worldwide. TEM -Threat and Error Management Model is the 6th generation CRM.

Fun, Frolic, the Job and Civil Aviation

The Enrollment

"Man proposes but God disposes". The proverb seemed so aptly put for me. I had gone to Delhi in pursuit of a career in law, yet without my deliberate intention I landed in Civil Aviation Training Center Pulchowk, for the Communication Training to get enrolled as 001group, (the first batch to graduate from Nepal), under the stewardship of the then HMG/ICAO. Thank God, the very initial days of my training trickled away with deep learning and fun. The classes conducted by the Nepalese and the Australian instructors were exemplary. From the very beginning, we experienced that learning can be fun and more can be achieved if done with the right spirit and attitude. For the first time in the Nepalese aviation history, a totally new concept was adopted for the 001 Group in completing the prescribed courses. Once a course was completed, its examination was taken immediately. Together with being spared the last moment of cramming we received ample time for concentrating on the new subjects rather than toying with the old subjects. A new attitude was paved for the future generation. Both the Australian and the Nepalese instructors prepared us more for the field work rather than just doing their routine work for us to get through the exams. Now at this age, as I sit back and relax in my home after nearly 33 years of my service to the Nepalese Aviation, I not only admire my instructors but I do off my hat in genuine salutation to them for making us what we are today in the aviation arena.

No sooner had we concluded our training, than we were transferred to the remote and STOL airfields of Nepal, to manage the airports both as administrators and as ACOs (Aeronautical Communication Officers) who, not only were totally raw as the uncut diamonds of civil aviation but also had the opportunity to prove our worth by excelling in the job assigned to us shouldering our responsibilities to the fullest. We indeed did live up to the expectations of our seniors who had the courage to say "yes they can do it if given the opportunity."

Bhairahawa: the First and Foremost

While most of my 001 ACOs got stationed at far flung remote airports of Nepal, I, on my part, was transferred to Meghauli first as an Airport Chief; however, before the transfer could be effective, I was shifted to Sidharthanagar as an ACO to work rubbing shoulder with both new and old ATC officers. My duty hours was allocated to work only for one shift and that was the morning shift –I was totally free in the afternoons. During my years in Bhirahawa, I had the opportunity to make a wide range of friendship with engaging into social activities. I was a member of Jaycees that flung me open immense windows of opportunities; it was Jaycees which germinated the idea of opening a kindergarten school, winning an oratory contest, and looking into the deeper aspect of social lives of the down trodden people of Bhairahawa. Performing my official duty in Bhairahawa I enjoyed huge chances as to fly into different remote stations of the far western part of Nepal by the courtesy of my pilot - friends from the then RNAC. Being young and enthusiastic, I gave my heart and soul to my assigned job --enjoying my job having lots of fun working hand in hand with my other co- ATC friends. Those days at Bhairahawa still swing in my mind. How I wish those days come back again to me, but alas bygones can't be repeated.

Wallowing in the laps of Majestic Holy Muktinath

Jomsom, the land of the Thakalies, abounds not only in the act of pleasure and amusement but by all means gives you that gusto to perform your morning duties which I tried on my behalf to manifest with all my accumulated knowledge that I had gathered during my training period. It is in these STOL stations that you need to demonstrate that you have the ability to guide an aircraft to its arrival and destination with flawless ease and aptitude. As the duties in this rugged and mountainous place, commences only during the morning hours that also before the gusty winds

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Former Joint Secretary
Ministry of Culture, Tourism and Civil Aviation

start bellowing and roaring down the majestic Himalayas of Nilgiri, it is natural that the majority of population have practically nothing much to do but to crowd around the chulo whiling away their time either sipping local marpha or playing 'paplu'. But for the very few like me, once the duty gets completed we tend to spend our time chatting with the tourists or getting glued to the video watching movies. My three years in Jomsom were most pleasurable, amusing, and duty bound of my career; I thank heaven for presenting me with the golden opportunity to get stationed there and get my life time experience as an ACO. Given a chance, I would love to repeat to work there. The days at Jomsom passed away in a jiffy and I really had at the best of everything including my job at 'Jomsom Tower' which provided me all the accolades and the required pat on the back both by the administration and the local Thakalies ; because my transfer did make them worry as to who the next ACO would be to replace me. Even today they often talk about me to the other ACOs transferred there; something to keep my head high.

Attaining the Job of Duty Officer: Manifestation of Pride and Honor

My work as a Duty Officer (this I vouched for myself only) in TIA extended more than that meets the eye so as to say, not getting the seam of my pants to the seam of my chair that invigorated me to perform that I loved the most i.e. extending my services to the public that I encountered during their visit to TIA. Not only that but I made sure that the toilets were neat and tidy, that the trolley operators were at beck and call to pull out and pull into

the arrival hall when necessary. Of course, my daily dose of receiving and seeing off the VIPs as well as the VVIPs was not deterred. This way and other chore of performances completed my nearly ten years of a duty officer at TIA till I was promoted and opted to go to the Ministry.

Days at the Ministry

My years at the Ministry were a mix bag of happiness and anxiety, vibrant and often worthy of my duty. Strangely even till the last date of my retirement some problems were there of misunderstanding; even though, thank God, I survived and managed to get a promotion before I even could prepare for my unexpected retirement. No doubt everyone gets his retirement but I honestly hope no one has to go through the unnecessary harassment and running from pillar to post to get justice which, to my dismay, I did not. Hence I had to knock the door of justice and I am still waiting for it to open for me.

Conclusion and Benchmark

Now as I recollect my days at Civil Aviation and The Ministry, from the very outset I have had a very enthusiastic and loveable service period. Above all, I remained true and honest to all my assigned duties and all my endeavors were made in the name of my nation. I tried my level best to be a good officer and an honest friend to all I met. I am proud to say that I have been the one to initiate some of the system of Aerodrome Duty Office at T I A. I, as an Under Secretary, was the one to ink the IATA on behalf of the Nepalese Government to introduce IATA into Nepal, including other trifling matters during my days at Civil Aviation. I always mustered my courage to perform my best on all of my assigned duties be it checking the TIA toilets, shooing away the khates (the urchins and the vagabonds loitering at TIA) encountering the VVIPs or attending any seminars within Nepal or outside Nepal. I indulge no hard feeling or grudge against anyone and hope I get the same in return.

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Lo! Life is coming just near, For the rescue-landing here
Hi man, hurry-up, We just have to get on there.

Requirements for RNP AR Authorization for Foreign Air Carriers into Nepal

Background

To manage the increasing traffic in the mixed traffic environment with heterogeneous type of aircraft in the Tribhuwan international Airport has always been a challenge for the air traffic controllers, operators, and above all the Civil aviation Authority which is the sole Authority to provide ANS services, aerodrome operation and to regulate the operation of the aircraft in Nepal.

Because of the demanding Air Traffic Control and terrain environment of Kathmandu Airport many studies in the past concluded the inapplicability of precision approach by Instrument Landing System, an alternate sought to the current VOR/DME based non precision approach.

Thanks to ICAO for taking the initiative for Implementation of Performance Based Navigation (PBN) worldwide using the emerging and advanced technologies including the satellites.

In line with the ICAO PBN Implementation plan, CAAN decided to implement the RNPAR at Tribhuvan international Airport to overcome the present difficulties as well as to improve safety and reliability of aircraft Operations

In August 2011, **RNP AR** (Required Navigation Performance with Authorization Required) project was launched by the Civil Aviation Authority of Nepal (CAAN) in cooperation of Airbus and Quovadis (sister company of Airbus) to enhance the safety and a new approach procedure with standard terminal arrival routes was designed for Runway 02. The RNP-AR APCH procedure is so designed to take into account of the proximity of high terrain and the steep approach angle of the conventional approach into TIA.

By taking full benefit of aircraft capabilities and satellite-based navigation system (Global Navigation Satellite System – GNSS), RNP AR procedure allows an aircraft to fly accurate and repeatable trajectories without relying on ground-based navigation aids.

Quovadis performed a data survey on-site to get accurate obstacles data in WGS-84 reference and designed the new RNP AR procedures, validated on Airbus simulators. The data then verified and also published in AIP Nepal. Quovadis also provided trainings to TIA Air Traffic Controllers (ATC) for the Performance Based Navigation and specifically the RNPAR based on the Kathmandu TMA environment.

Kathmandu RNP AR procedures were approved by CAAN in April 2012 and issued AIRAC AIP Supplement S011/12 of RNP-AR APCH procedure dated 03 May 2012 effective from 28 June 2012. The flexibility provided by the new Kathmandu RNP AR Approach procedure allows circumnavigating the terrain currently over flown using the conventional VOR/DME approach. Fig

Mahesh Kumar Basnet
Deputy Director, CAAN Head Office

The RNP AR procedure is available for all airlines flying to Kathmandu as it is published in CAAN Aeronautical Information Publication (AIP) in May 3, 2012 All airlines flying to Kathmandu may take full benefits of the new procedure provided their aircraft are RNP capable and crews are trained.

Requirements

The beauty of PBN is that the navigation specifications and the requirements for the operators, aircraft, controllers and civil aviation authorities are specified in the ICAO PBN Manual DOC 9613. Oerational and airworthiness approval
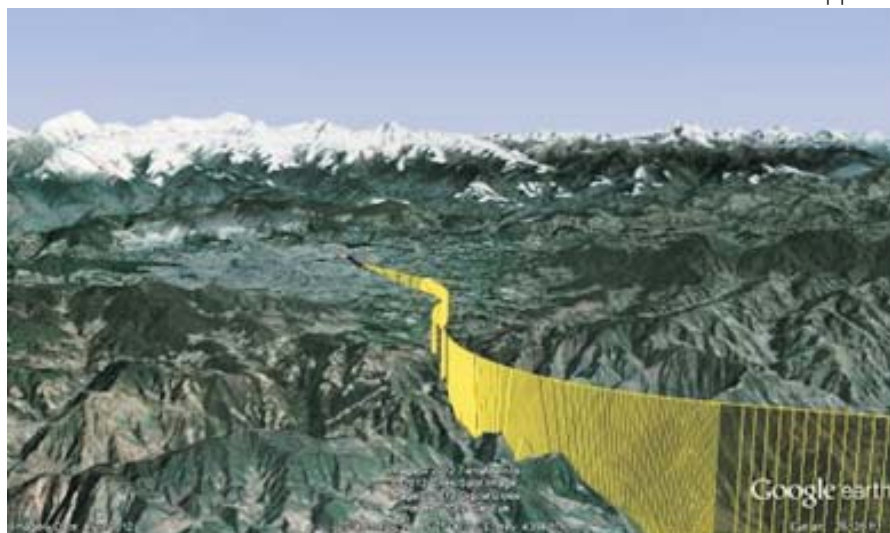
to the operators are to be given by the State of the operator. For example to fly the RNP Approach at Biratnagar by the Nepalese operators the approval must be acquired from CAA Nepal. Navigation specifications are also specific i.e with RNAV 1 or RNP 1 approval an aircraft does not qualify for the RNP Approach.

Similarly for RNPAR, there are some additional requirements. Authorization is required not only for the aircraft but also for the aircrew. The operational and airworthiness approval as well as approval to the aircrew are given by the civil Aviation authority of the State of the operator. In Kathmandu RNP AR the foreign Operators first seek the operational approval from their civil aviation Authority and apply in CAAN.

Authorization from Civil Aviation Authority Nepal is mandatory to fly the RNP-AR APCH procedure as published in the CAAN AIP Supplement.

An AIC 002/012 dated 30 November has been issued by CAAN regarding the application to conduct RNP AR Approach procedure at TIA.

Below is the summary of the checklist of documents to be submitted to Civil Aviation Authority of Nepal by foreign air carriers for the conduction of RNP AR APCH into Tribhuvan International Airport (TIA), Kathmandu:

a. Application to conduct RNP AR APCH with the authorized signature,

b. Letter of Approval granted by the concerned Contracting State, i.e. National Aviation Authority for the conduct of RNP AR APCH which clearly indicates the name of the operator/airline and the type of aircraft that will conduct the approach,

c. Contingency procedure, in case of engine failure during any phase of the RNP AR APCH,

d. Documents showing RNP AR APCH compliance by aircraft/navigation systems,

e. Operating procedures and policies,

f. Sections of the maintenance manual related to RNP AR APCH systems,

g. FOSA report,

h. The ground, simulator and flight training reports that qualify flight crews for RNP AR operations,

i. Flight simulator report,

j. Programme for flight crews to maintain proficiency in the RNP AR operations, and

k. Briefing and training programme to qualify flight crews for RNP AR APCH at Tribhuvan International Airport.

The operators shall submit the documents as required by the checklist along with the documents as mentioned above to DGCA Nepal.

Authorization for the particular air carrier and the type of the aircraft concerned shall be granted by DGCA Nepal.

Special features

RNP AR procedure at Kathmandu allows to improve the safety taking into account of proximity of terrain and steep descend angle of the conventional approach . Additional benefits
-Operational costs savings:
o   Less diversions
o   Less cancellations
o   Less Fuel burn
-TMA (Terminal Control Area) enhancement
o   Less ATC/flight crew communication
o   Increased airspace capacity
-Environment:
o   Reduce CO2 emission with more direct routes and less fuel burn

Conclusion

RNP AR commercial flights to Kathmandu have been started since October 2012. The launch operator Qatar Airways is conducting the RNP AR approach successfully with its A320 aircraft. As involved in the implementation of RNP AR as a CAAN official, I flew the Kathmandu RNP AR Approach as an observer. The approach was comfortable with Continuous Descent Operation and constant descent angle keeping the passengers more comfortable and the pilots at ease in final phase of landing.

TIA, one of challenging airports in the world, has become one of the safest through utilizing the RNP AR technology.

We are the ones who make the flight safe: technicians workings inside a hanger.

Revenue & Accounting System of CAAN: IT Perspective

Background

Civil Aviation Authority of Nepal (CAAN)'s mission is Ensuring Safe, Secured, Efficient, Standard and Quality Service in Civil Aviation and Airport Operations through Strategies of Airport Marketing, Facilitating, Diversifying Revenue sources, Monitoring Organization Performance and HRD Training. The Organization's success in the achievement of its strategic outcomes will depend critically on ensuring that it remains an increasingly responsive and efficient Organization equipped to provide aviation services in a globally harmonized manner.

In order to be responsive and efficient, CAAN needs to ensure that it builds "a responsive communications interface between itself and its customers and key stakeholders" and "an efficient Administrative and Management support structure" to enable its Programs to deliver results. This implies:

1. ensuring better service to all stakeholders;
2. placing results at the core of planning and managing programs;
3. managing human and financial resources effectively;
4. providing reliable operational support to programs; and above all
5. ensuring efficiency, transparency and accountability

CAAN has to have Strategic Plan that enunciates several key strategies that will lead to a more service-orientated, efficient, transparent and accountable Organization. A comprehensive Enterprise Resource Planning system will support these strategies by providing tools to:

- Enhance linkages between the use of resources and results planned and approved : Accountability
- Allow roles and responsibilities to be clearly defined with appropriate levels of authority in accordance with the Organization's accountability framework: Accountability
- Capture data once at source for use in downstream processes: Efficiency

- Streamline processing of transactions and data: Efficiency
- Provide accurate data and information in a timely manner from a single reliable source: Transparency and Efficiency
- Comply with internal controls, data security, confidentiality and audit trail requirements: Accountability
- Consolidate stakeholders information and improve service delivery: Service-Orientation

To ensure implementation of comprehensive Enterprise Resource Planning system requires the underlying IT infrastructure to support a performance management system that includes a philosophy of continuous improvements. In doing so CAAN needs to develop and embrace a comprehensive IT strategy to provide the infrastructure to support its operational business plus the capability to develop solutions to complement the airport operation and air navigation service processes and systems. These include asset management, financial management, operational reporting and HR systems to name but a few.

Today's challenges lie in the ability to respond to the growing requirements of the operational, statistical and financial information of CAAN.

While managing multiple airports with best utilization of infrastructure to ensure optimized revenue and better service delivery, airport operation and air navigation services operations with different information systems in place, has to be integrated into Centralized database having accurate, real time information from a consolidated source.

Integrated approach

Based on airport operations, air navigation services and Regulatory roles and responsibilities of CAAN, a Centralized operational database comprising of following subsystems to enable the capture, consolidation and reporting of information in a streamlined, reliable and transparent manner..

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I) Airport Operational Database (AODB)
II) Flight Movement Database

I) Airport Operational Database (AODB) holds airport's operational data and makes it available to other systems for further processing. The principal role of the AODB is to be the primary holder of all data that relates to all operational activity, both flight and facility related. This database shall support real-time data warehousing and retrieval of data from IT systems and provide the mechanism for the integration of systems throughout the organization.

An AODB integrates into other airport systems and receives data feeds from outside sources, such as airlines (receiving, for example, MVT data and IATA Edifact information). Typical data that the AODB will store includes which aircraft arrived when, from where, and departed bound for where, with how many passengers and how much freight, where it parked, and what other airport services it used. The AODB will contain historic, actual, and planned data and feeds enterprise and financial systems. The databases can also drive other systems, such as dynamic signage, etc. They can also feed airport enterprise systems for purposes such as billing.

The schedule data in an AODB is important for many reasons, but primarily because it facilitates pre-plan allocation of resources such as gates, check-in desks, parking stands, and ground power, among others. It comes as planned seasonal data from airlines, often using Seasonal Schedule Message (SSM) data, which in turn receives updates nearer the

day of operation with Ad-hoc Schedule Messages (ASMs).

Aircraft pairings are important to airports as well as airlines, and these can be input into the AODB via SCRs (Slot Clearance Requests). A pairing identifies the airline's planned "turn," showing arriving flight and departing flight. The IATA SSIM Manual gives full details of these schedule messages.

AODB schedule data also drives Flight Information Display System (FIDS) or Flight Information Management System (FIMS) displays, which show planned and actual schedules in real time to airport staff, passengers, and visitors.

II) Flight movement data can be captured and stored automatically and/or manually from CNS/ATM systems in place with the interface of AMHS/AFTN system to collect flight data of inbound flights, outbound flights and over flights. RDPS/FPD is the principal source of Flight movement Data. The interface to such core ATM system synchronizes with the flight movement database in real time by automating many of the existing data management process – reducing the amount of human interventions which leads to error and rework.

The Automated billing system

Based on Centralized AODB and FMDB in core background, Billing module keep tracking of aeronautical and non-aeronautical billable activities and automating the charge calculation process – ensuring transparency, consistency and accuracy and Providing the billing functions with modern tools, training and processes to enable them to excel in their roles and quality of service delivery.

Aeronautical Charges

Aeronautical billing utility used to completely automate processing of aircraft movement data. It applies Aeronautical fee policy based on weight, seat, time of day, engine type, sector, operation and wing type for automatic fee calculations of Landing, Terminal, Passenger, Parking, and other fees.
1. capture of flight data and creates the single best dataset for each physical flight

2. automatically fusing the multiple data messages to form the single best view of the flight
3. calculation of charges and taxes to produce aeronautical invoices
4. automatic identification of charging or invoice issues for intervention

Recurring Non-Aeronautical Charges - These are charged to manage the multitude of recurring fees and charges associated with airport operations. These typically include leases, concessions, licenses, utilities, parking, rentals, aircraft parking, etc. as well as tracking of the various recurring fees, effective periods, documentation requirements, etc.

The Financial management Information system role is to manage the corporate accounting and finance function, including income and expenditure, assets and liabilities, cash and debtor management, procurement/payment workflow processes. Automated billing is a data source for revenue/billing information to the ERP which in turn monitors cash and debtor positions.

The proposed system architecture addresses three main Areas (figure 1):
1. Billing Processing
2. Financial Management
3. Statistics and Reporting
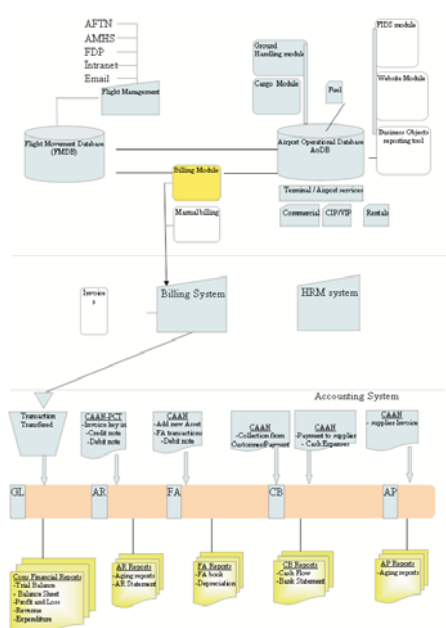
How to choose accounting software system ?

In order for a system to meet needs, it should mesh with existing practices and adapt to technological innovations. Ideally, software that's simple, intuitive, and closely matched to how already doing. This could be achieved by:

1. Available Enterprise software packages
2. Developing software for CAAN

The second option needs a complete software project cycle starting from requirement analysis, design, specifications, coding to testing, while the first one could be the best suits if software properly selected being sure that the system can:

• Embrace industry-standard technology quickly and easily.
• Customize easily to fit the special needs of your business.
• Deploy flexibly to new IT paradigms such as application hosting.
• Scale to the changing size of business.

What a good system delivers

Properly installed and implemented accounting software can contribute many benefits to the organization, including:

• Better decision-making capabilities
• Improved cash flow
• More accurate information
• More control
• A foundation for growth

The challenges to successfully choosing, installing, and implementing new accounting software are many. But so are the opportunities—to gain greater control of organization's financial affairs, to make better decisions, and to improve cash flow, among others.

Software Selection

Key steps for successful selection of Accounting System are summarized as follows:
1. Involve the right people
2. Define the challenge.
3. Choose a consultant.
4. Evaluate application performance.
5. Choose a software vendor.
6. Implement the system.

1. **Involve the right people:** Accounting software generates information used throughout the organization. That's why choosing new software shouldn't be delegated to a single department or manager. Participation across functional groups will help to select, implement, and use the best possible financial software solution. There are, in general, five groups of people who should be involved in the selection process:

System users: These are the people who will use the software daily. They need the software to be user-friendly, logical, and efficient.

System managers: Managers supervise the system users. These system managers must understand the financial information and reporting needs required by upper management, and then direct system users about how to effectively use the system.

System customers: Financial information customers can be found throughout the organization, in every department and at any level. These people rely on the reports, summaries, and other data generated by the accounting system to make decisions and otherwise manage their particular group or department. System customers may not necessarily understand accounting fundamentals, but they do require the information supplied by the software.

System sign-offs: These are the people who must give final approval to acquire the system. Typically this group includes representatives from IT, accounting, and the executive management team.

IT staff: Representatives from the organization's IT staff should be closely involved in the accounting software selection process and typically play key roles in the software's installation and ongoing upkeep.

2. **Define the challenges:** Understanding organization's financial information capabilities and weaknesses is critical to selecting the appropriate accounting software solution. The more we know about the challenges that we expect the software to solve, the more informed decisions we'll make.

3. **Choose a consultant**
   It's recommended to make team within organization utilizing internal staff expertise—to devote to analyzing, purchasing, installing, and maintaining a system. to successfully implement new accounting system.

4. **Evaluate application performance:**
   Once selected team of consultant to work with, it's time to review specific software applications. The vast majority of accounting programs perform basically the same functions. Naturally, how they do specific tasks varies greatly. Here are several of the key elements to consider when reviewing various accounting software solutions.

   - The company: Industry leader in the domain, experienced, prominent vision of future are the few key element of consider and beware from "here today, gone tomorrow" organization
   - Ease of use:
   - What's underneath the iceberg? Most accounting software solutions include basic components. Careful review of what a program doesn't have as part of its core modules; available options, while nice to have, can also quickly become expensive.
   - Application hosting: One of the challenges of implementing an integrated business management

system is that it requires a fairly large investment in hardware, software, and technical support.
   - Capacity
   - Reporting capabilities
   - Ease of input
   - Data validation
   - Error handling
   - Security

5. **Choose a software vendor**
   Now that you've reviewed the various accounting software possibilities, it's time to make a choice. It's important to realize that we're not only selecting an accounting system— we're choosing a company as well. A good technical support team

6. **Implement the system**
   Once chosen the vendor and product, and purchased the software, it's time to install the solution. This is an exciting part of the process. However, it can also be a frustrating time as well! It will take time to adequately and safely install the new software

Training

Even the best software can be a nightmare to the organization if people are not properly trained to use it. People are the key to the success of any accounting software program. Good staff training is essential and provides the information, practice, and involvement needed to get the most out of the software. Different people within organization will have different skills and levels of experience, a training plan will get everyone up to speed.

Keep people informed

Frequent review meetings during the implementation phase will also help people become familiar with the new system. Don't surprise users—let them know when changes will occur. As well, keep your management team involved during the implementation process through meetings, attending the training, etc.

References:

- SAP Enterprise Resource Planning web resources: htpp://www.sap.com
- Enterpriseappstoday: htpp://www.enterpriseappstoday.com
- World Intellectual Property Organization (WIPO resources): htpp://www.wipo.inp
- SageAccpac implementation guide; htpp://www.na.sage.com
- FlightYield, Product overview, Airways Interternational, Newzealand.

Setting up Independent Investigation Unit

Enhancing global civil aviation safety is one of the fundamental Strategic Objectives of ICAO. To achieve this objective ICAO is continuously monitoring the States' safety status as well as implementation status of Standards and Recommended Practices (SARPs) through Universal Safety Oversight Audit Program (USOAP). Being a member State of ICAO, Nepal is obligated to comply with the Standards and Recommended Practices contained in Annexes to the convention on International Civil Aviation. ICAO Annex 13 contains Standards and Recommended Practices relating to the independence of the accident investigation authority.

Maintaining independence in the conduct of investigations will result in enhancing the credibility of the Investigation Authority and its ability to avoid situations that have the potential to create conflicts of interest. Maintaining independence of the investigation function is equally important for accident and incident investigations. The intent of "independence" is that the Investigation Authority shall be functionally independent, in particular, of the civil aviation authorities responsible for airworthiness, certification, flight operation, maintenance, licensing, air traffic control or airport operation and, in general, of any other party whose interests could conflict with the task entrusted to the investigation authority. "Independence" does not mean that the Investigation Authority would not be administratively supervised and accountable to a governmental minister or ministry (or parliament) for its finances, administration, policies and working methods (which should be transparent).

ICAO Requirements on Independence of Accident Investigation Authority

According to ICAO Annex 13, an accident investigation authority must be strictly objective and totally impartial and must also be perceived to be so. It must also be able to conduct investigations in an independent manner that precludes interference from outside pressures. The following references are relevant:

- ICAO Annex 13, Chapter 3, paragraph 3.1
  "The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability."
- ICAO Annex 13, Chapter 5, paragraph 5.4
  "The accident investigation authority shall have independence in the conduct of the investigation and have unrestricted authority over its conduct…."
- ICAO Annex 13, Chapter 5, paragraph 5.4.1
  "Any investigation conducted in accordance with the provisions of this Annex shall be separate from any judicial or administrative proceedings to apportion blame or liability."

Note. - Separation can be achieved by the investigation being conducted by State accident investigation authority experts, and any judicial or administrative proceedings being conducted by other appropriate experts. Coordination, as per 5.10, between the two processes would likely be required at the accident site and in the gathering of factual information, with due consideration to the provisions in 5.12."

- ICAO Annex 13, Chapter 5, paragraph 5.4.3

"A State should ensure that any investigations conducted under the provisions of this Annex have unrestricted access to all evidential material without delay and are not impeded by administrative or judicial investigations or proceedings.

Note. — The intent of this recommended practice may be achieved through legislation, protocols or agreements between the accident investigation authorities and the judicial authorities."

Nepal's Context

Civil Aviation (Accident Investigation) Rules, 1967 mandates the Ministry of Culture, Tourism and Civil Aviation to

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Deputy Director, CAAN Head Office

constitute accident investigation commission in the aftermath of civil air accidents. The commission institutes an inquiry into circumstances of the accident and submits the Final Report to the Ministry of Tourism and Civil Aviation. Within the short span of time commission requires to submit the Final report without getting chance of receiving comments on Draft Final Report from the concern organizations. This creates the pressure to commission for the submission of Report within allocated time resulting into the making of inappropriate safety recommendations. Most of the Final Report of the accident investigation is not made publicly available.

During USOAP carried out in Nepal from 5-14 May 2009, 98 findings were assessed in all protocol areas out of which 12 findings were assessed on the Aircraft Accident Investigation (AIG) Protocol. Nepal has been assessed as not having an independent investigation system as one of the AIG finding because of not having provision of independent investigation authority in the legislation of aircraft accident investigation 1967. Therefore, a course of corrective action has been taken to address the findings and recommendations (F&R) of the audit. As a result, draft amendment of Aircraft accident and incident investigation regulation 1967 has been prepared incorporating the above provisions of Annex 13 and pending approval at the Council of Ministry.

Civil Aviation Authority of Nepal (CAAN) Board of Directors has approved State Safety Program (SSP) which would provide the guidance for the service providers to

be implementing Safety Management System (SMS) which ultimately establishes acceptable level of safety. Among seven elements of the ICAO SSP framework, third element is accident and incident investigation. State requires proper implementation of SSP to prevent aircraft accidents in future due to same cause.

The CAAN has also promulgated a Voluntary Information Reporting System (VIRS), requirement for the service provider through which safety data are collected, analyzed and exchanged for the purpose of accident prevention. However, this requirement has not been fully implemented because of lack of database software.

A meeting chaired by Hon. Minister for Culture, Tourism and Civil Aviation, held immediately after the Sita Air (9N-AHB) crash on 29th September 2012, decided to implement that a separate and permanent body shall be formed to investigate about aviation accident.

How to achieve independence?

To achieve independence in the investigation the State should have:
1. Appropriate legislation on aircraft accident investigation and such legislation must have provision to establish an independent accident investigation authority (or commission, board or other body).
2. The legislation or regulations that provide for the independence of the accident investigation authority in charge of conducting aircraft accident and incident investigations.
3. Its own appropriately qualified personnel and charged with aircraft accident and serious incident investigation duties.

4. Sufficient human resources to meet its national and international obligations related to aircraft accident investigations.
5. Arrangement (eg.MOU) with other States or with regional organizations to obtain the necessary personnel in an expeditious manner in the event of an accident.

Major responsibilities of Investigation Unit

- Conducting Accident/Incident Investigation with the support of expertise from various technical departments,
- Establishing and administrating the Voluntary Incident (Information) Reporting System,
- Updating investigation law, regulations and procedures in accordance with Annex 13
- Establishment of internal procedures aiming to ensure independence, confidentiality and proper use of safety data,
- Coordinating the follow-up of Mandatory Occurrence Reports (MORs),
- Administration and Analysis of Safety Database including Accident/Serious Incident data, MOR and VIRS, publish alerts or safety recommendations when appropriate,
- Measurement of State Safety Performance,
- Provide data for the establishment of State acceptable level of Safety,
- Coordination with local judiciary authorities, other States and agencies

- Administration of AIG related issues (maintaining the contact list, planning for resources).
- Arrange training for Investigators
- Rectify ICAO USOAP audit findings
- Arrange facilities and equipments for the investigation

Conclusion

Investigation Authority and its investigation teams should meet the requirements to ensure that the sole purpose of investigations is to prevent future accidents. Any judicial or administrative proceedings to apportion blame or liability shall be separate from the Investigation Authority. State should ensure for the establishment of an adequately funded, professionally trained, independent and impartial aircraft accident investigative body. State should also ensure the independence of all investigations in aircraft accidents and incidents, from political or other interference or pressure, and ensure the protection of safety data with the purpose of accident prevention. Similarly, State should issue Directive on occurrence reporting (mandatory and voluntary) in civil aviation to contribute to the improvement of air safety by ensuring that relevant information on safety is reported, collected, analyzed, stored, protected and disseminated.

References

- Doc 9962 - AIG Policy and Procedures Manual
- State Safety Program (SSP) Nepal
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Man is the master of all creatures
Who combines the machine with nature

Aeronautical Information Publication (AIP) and its Role on Safe Operation of Flight

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Introduction

AIP forms the basic element of the Integrated Aeronautical Information Package. It contains aeronautical information of permanent nature and temporary changes to this information of long duration. It is the task of each AIS (Aeronautical Information Services) to provide a comprehensive document, maintain it up to date and make it simple to use.

The content of an AIP is governed by 4.1, 4.2 and Appendix 1 of Annex 15, supplemented by the guidance in this manual as to how the requirements might best be met. Taking into consideration the increased use of automation in AIS (Aeronautical Information Services), the information contained in the AIP was arranged in such a manner that automation could be used, both for the production of the "paper" AIP as well as for creation of a database for retrieval of that information. In addition, duplication of information was avoided. To the extent possible, the AIP was also designed to facilitate its use in flight. The AIP must contain concise, current information relating to, and arranged under, the subject headings listed in Annex 15, Appendix 1.

The basic structure and referencing must be common to all AIP but at the same time it should allow for the specific requirements of States with respect to quantity and nature of information to be included. Annex 15 to the Convention on International Civil Aviation specifies that each Contracting State shall provide an "aeronautical information service". An aeronautical information service (AIS) is required to collect and distribute information needed to ensure the safety, regularity and efficiency of air navigation. Such information, which includes the availability of air navigation facilities and services and the procedures associated with them, must be provided to flight operations personnel, as well as the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

The effective functioning of AIS is dependent upon the cooperative effort of all aeronautical services, such as communications, aerodromes and air traffic services, since the raw information must be originated by such services. It is, therefore, incumbent upon the national aviation authority to ensure that all the required information is supplied to the AIS as promptly as possible.

Integrated Aeronautical Information Package

The material to be provided by and exchanged between States is published as an Integrated Aeronautical Information Package (i.e. Aeronautical Information Publication (AIP), including amendment service, AIP Supplements, NOTAM, pre-flight information bulletins (PIB), Aeronautical Information Circulars (AIC), checklists and list of valid NOTAM). While the various elements of the Integrated Aeronautical Information Package are all employed in the distribution of aeronautical information, specific criteria exist in Annex 15 for the use of each element. These criteria relate to the duration or "shelf life" of the information, the extent of the changes to existing information and the advance notice of the information.

Purpose of an Aeronautical Information Services (AIS)

Need of the operator:

The operator of any type of aircraft, be it small private aircraft or large transport aircraft, must have available a variety of information concerning the air navigation facilities and services that may be expected to be used. For example, the operator must know the regulations concerning entry into and transit of the airspace of each State in which operations will be carried out, as well as what aerodromes, heliports, navigation aids, meteorological services, communication services and air traffic services are available and the procedures and regulations associated with them. The operator must also be informed, often

on very short notice, of any change affecting the operation of these facilities and services. Similarly, he must know of any airspace restrictions or hazards likely to affect flights. While this information can nearly always be provided before take-off, it must in some instances be provided during flight.

Origin of aeronautical information

AIS does not normally originate the information it processes and ultimately issues. The "raw data" must be provided by those responsible for the operation of the various air navigation facilities and services. Since an AIS is one of several services that normally come under the control of the aviation administration of a State, and since its effectiveness is highly dependent upon the provision of required information by other services, it is most important that the position of an AIS in the overall picture, and the responsibility of other services for providing the required information, is well understood. The basic purpose of an AIS is to provide information needed to ensure the safety, regularity and efficiency of civil aviation and, regardless of the efficiency of its organization, its ability to perform this important function will be highly dependent upon the adequacy, accuracy and timely provision of the required raw data by each of the State services associated with aircraft operations. To secure this, an easy and effective liaison needs to be established between an AIS and other, related services. Also, the status accorded to the AIS within the aviation administration, as well as its physical location, should be determined with care to ensure the necessary priorities and liaison.

Scope and type of information

The information handled by AIS may vary widely in terms of the duration of its applicability. For example, information related to airports and its facilities may remain valid for many years while changes in the availability of those facilities (for instance, due to construction or repair) will only be valid for a relatively short period of time. Information may be valid for as short a time as days or hours. The urgency attached to information may also vary, as well as the extent of its applicability in terms of the number of operators or types of operations affected by it. Information may be lengthy or concise or include graphics.

The object of aeronautical information services

The object of aeronautical information services, as stated in Annex 15, is to ensure the flow of information necessary for the safety, regularity and efficiency of international civil aviation.

Offence against the safety of air flight

Endangering the safety of an aircraft on flight by communicating any information in spite of the knowledge of its being false shall constitute an offence against the safety of air flight.

Aeronautical information and related Annexes

The Development and safe operation of Air Transportation is highly dependent on all stake holders' mutual and joint effort to follow the relevant Annexes, Rules and regulations. Since Air transportation is run on the basis of ICAO convention, Annexes 1-18, different ICAO documents and Aeronautical Information Services must deal with all information based on relevant documents. AIS (Aeronautical Information Services) is related directly to Standards and recommended practices of Annex 2- 18 and several documents.

1) **Provision of information on the operational status of radio navigation services:** Aerodrome control towers and units providing approach control service shall be provided with information on the operational status of radio navigation services essential for approach, landing and take-off at the aerodrome(s) with which they are concerned, on a timely basis consistent with the use of the service(s) involved.

2) **Hours of service:** The Competent Authority shall give notification of the normal hours of service of stations and offices of the international aeronautical telecommunication service under its control to the aeronautical telecommunication agencies designated to receive this information by other Administrations concerned. Whenever necessary and practicable, the Competent Authority shall give notification of any change in the normal hours of service, before such a change is effected, to the aeronautical telecommunication agencies designated to receive this information by other Administrations concerned. Such changes shall also, whenever necessary, be promulgated in NOTAM.

If a station of the international aeronautical telecommunication service, or an aircraft operating agency, requests a change in the hours of service of another station, such change shall be requested as soon as possible after the need for change is known. The station or aircraft operating agency requesting the change shall be informed of the result of its request as soon as possible.

3) **Aerodrome dimensions and related information:** The following data shall be measured or described, as appropriate, for each facility provided on an aerodrome:
   a) Runway — true bearing to one-hundredth of a degree, designation number, length, width, displaced threshold location to the nearest metre or foot, slope, surface type, type of runway and, for a precision approach runway category I, the existence of an obstacle free zone when provided;
   b) Strip, runway end safety area, stopway _ length, width to the nearest metre or foot, surface type

   c) Taxiway — designation, width, surface type;
   d) Apron — surface type, aircraft stands;
   e) The boundaries of the air traffic control service;
   f) Clearway — length to the nearest metre or foot, ground profile;
   g) Visual aids for approach procedures, marking and lighting of runways, taxi ways and aprons, other visual guidance and control aids on taxiways and aprons, including taxi holding positions and stopbars, and location and type of visual docking guidance systems;
   h) Location and radio frequency of any VOR aerodrome check-point;
   i) Location and designation of standard taxi-routes; and
   j) Distances to the nearest metre or foot of localizer and glide path elements comprising an instrument landing system (ILS) or azimuth and elevation antenna of microwave landing system (MLS) in relation to the associated runway extremities.

4) **Coordination between aeronautical information services and aerodrome authorities:** To ensure that aeronautical information services units obtain information to enable them to provide up-to-date pre-flight information and to meet the need for in-flight information, arrangements shall be made between aeronautical information services and aerodrome authorities responsible for aerodrome services to report to the responsible aeronautical information services unit, with a minimum of delay:
   a) Information on aerodrome conditions.
   b) The operational status of associated facilities, services and navigation aids within their area of responsibility;
   c) Any other information considered to be of operational significance.

5) **Condition of the movement area and related facilities:** Information on the condition of the movement area and the operational status of related facilities shall be provided to the appropriate aeronautical information service units, and similar information of operational significance to the air traffic services units, to enable those units to provide the necessary information to arriving and departing aircraft. The information shall be kept up to date and changes in conditions reported without delay.

The condition of the movement area and the operational status of related facilities shall be monitored and reports on matters of operational significance or affecting aircraft performance given, particularly in respect of the following:

a) Construction or maintenance work;

b) Rough or broken surfaces on a runway, a taxiway or an apron;

c) Snow, slush or ice on a runway, a taxiway or an apron;

d) Water on a runway, a taxiway or an apron;

e) Snow banks or drifts adjacent to a runway, a taxiway or an apron;

f) Anti-icing or de-icing liquid chemicals on a runway or a taxiway;

g) Other temporary hazards, including parked aircraft;

h) Failure or irregular operation of part or all of the aerodrome visual aids; and

i) Failure of the normal or secondary power supply.

6) **Essential Information:** Essential information on aerodrome conditions shall be given to every aircraft, except when it is known that the aircraft already has received all or part of the information from other sources. The information shall be given in sufficient time for the aircraft to make proper use of it, and the hazards shall be identified as distinctly as possible.

7) **Aeronautical fixed telecommunication network (AFTN):** The following categories of message shall be handled by the aeronautical fixed telecommunication network:

a) Distress messages;

b) Urgency messages;

c) Flight safety messages;

d) Meteorological messages;

e) Flight regularity messages;

f) Aeronautical information services (AIS) messages;

g) Aeronautical administrative messages;

h) Service messages.

Schedules and frequencies of all broadcasts shall be publicized in appropriate documents. Any change in frequencies or times shall be publicized by NOTAM at least two weeks in advance of the change.* Additionally, any such change shall, if practicable, be announced on all regular broadcasts for 48 hours preceding the change and shall be transmitted once at the beginning and once at the end of each broadcast.

8) **Information on aerodrome conditions and the operational status of associated facilities:** Aerodrome control towers and units providing approach control service shall be kept currently informed of the operationally significant conditions of the movement area, including the existence of temporary hazards, and the operational status of any associated facilities at the aerodrome(s) with which they are concerned.

9) **Information on the operational status of navigation services:** ATS units shall be kept currently informed of the operational status of radio navigation services and visual aids essential for take-off, departure, approach and landing procedures within their area of responsibility and those radio navigation services and visual aids essential for surface movement.

10) **Information for aeronautical information services units :** The meteorological authority, in coordination with the appropriate civil aviation authority, shall arrange for the supply of up to-date meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.

11) **Exchange of Information with the aeronautical services (AIS):** ATS units must be kept fully informed about the air navigation situation in their own area of responsibility and also in adjacent areas to the extent that such information may have an influence on the flow of air traffic of concern to them (e.g. status of radio navigation aids, military exercises, etc.). It is therefore essential that designated aeronautical information services (AIS) units provide the associated ATS units with the latest information available to them. In addition, as regards TWRs and APPs, arrangements should be made which cover those cases where new information has come to hand between the time of pilot briefing by AIS and his departure, which could affect the conduct of his flight in a significant manner and which, therefore, needs to be brought immediately to his attention. A further point which needs co-operative efforts concerns the manner in which changes to the ATS system requiring NOTAM action should be notified to the AIS unit concerned for the issue of an appropriate NOTAM.

12) **State's responsibility under the Convention and its Annexes includes:** The provision of air navigation services (inclusive of meteorological services, aeronautical telecommunications, search and rescue services, charts and the distribution of information).

To foster safety in the aviation operational environment, the supply and speedy dissemination of safety-critical information, such as a Notice to Airmen (NOTAM) and airworthiness directives, are essential. The importance of the regular amendment and updating

of publication such as aeronautical maps and other aviation-related publications should not be discarded in respect of its role in ensuring a safe operating environment.

13) **Technical guidance, tools and the provision of safety-critical information:** The provision of technical guidance (including processes and procedures), tools (including facilities and equipment) and safety-critical information, as applicable, to the technical personnel to enable them to perform their safety oversight functions in accordance with established requirements and in a standardized manner. In addition, this includes the provision of technical guidance by the oversight authority to the aviation industry on the implementation of applicable regulations and instructions.

Conclusion

Successful Aviation business depends on correct and timely flow of information. Information provider (ANS, Aerodrome operator and other) and user must give emphasis of flow of information. Questions related to safe operation in Nepalese sky are frequently raised in most of national and international media. As we are optimistic and believe that every cloud has a silver lining, the problems of Aviation field are also solved with positive thought and correct information flow. Let's hope every stake holder emphasizes on safe operation through Aeronautical Information Publication in correct and timely manner. Safety is everybody's concern. No single person, unit can achieved safety without coordinated and integrated efforts. Some of the best lessons we ever learn, we learn from our mistakes and failure. The error of the past is the wisdom and success of the future.

References

- Annex 15, 14 vol i, 11, 10 (vol. i &ii)
- ATS Planning Manual Doc 9426
- PANS-ATM Doc 4444
- AIS Manual Doc 8126
- Safety Management System
- Safety oversight manual parts Doc 9734
- Civil Aviation Act, 2015 (1959)

It is only the Civil Aviation
That can develop a landlocked hilly nation.

Safety Oversight in Nepal: Promotion and Protection of Civil Aviation

One of the core functions of civil aviation authority is the safety oversight. Safety oversight is the process of ensuring that aviation personnel, airlines, aircraft, manufacturers, air navigation service providers, aerodrome operators and others who are engaged in aviation are performing their functions safely and responsibly.

The concept of aviation safety oversight began with a safety programme which included rigorous maintenance of aircraft and tough selection criteria for pilots. The programme resulted in dramatic reduction in fatality rates as compared with unregulated commercial operators. This leds to extensive calls from aviation industries for government to regulate civil aviation. However, there was also hue and cry from some section of the industry claiming that stringent protection conflicts aviation growth.

International Civil Aviation Organization (ICAO) has defined safety oversight as a function by means of which states ensure effective implementation of the safety-related standards and recommended practices (SARPs) and associated procedures contained in the annexes to the Chicago Convention and related ICAO Documents. Safety oversight, as entrusted by ICAO, ensures that the national aviation industry provides a safety level equal to, or better than, that defined by the SARPs. ICAO believes that the responsibility of the individual state for safety oversight is the foundation upon which safe global aircraft operations are built and inability to perform safety oversight by one state threatens the health of international civil aviation operation.

ICAO endeavors to safety oversight

The main technical achievement of ICAO for the last sixty years has been the agreement of its contracting states on the necessary level of standardization of civil aviation for the safe, efficient and regular operation by adopting 18 annexes to the Chicago convention which is popularly known as SARPs. However, many contracting states are unable to carry out their safety oversight functions due to the obvious reasons such as lack of regulatory framework, lack of technical and financial resources to carry out the minimum requirements of the Chicago convention. As a result, the ICAO assembly adopted resolution A29-13: Improvement of safety oversight, reaffirming individual state's responsibilities for safety oversight which are:

- The licensing of operational personnel;
- Certification of aircraft, air operators ,and aerodromes;
- The control and supervision of licensed personnel, certified products, and approved organizations;
- The provision of air navigation services(inclusive of meteorological services, aeronautical telecommunications, search and rescue services, charts and the distribution of information); and
- Aircraft accident and incident investigation.

The ICAO says that effective execution of the above responsibilities is fundamental for the safe, efficient and regular aircraft operation across national boundaries and throughout the world. However, the inability of many contracting states to carry out their safety oversight functions led ICAO Assembly (resolution A32-11) to direct the establishment of a universal safety oversight audit programme (USOAP), comprising regular, mandatory, systematic and harmonized safety audit later expanded to annexes 11, 14, and 13(resolution A33-8). The 35th session of the ICAO assembly went further directing that the USOAP be expanded to cover all safety-related annexes.

Critical elements of a safety oversight system and The CAAN

The first administrator of the Federal Aviation Agency, Ellwood Quesada, made safety oversight a high priority programme and emphasized consideration on 4F's- firmness in application, fairness in considering the

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interests of the public and airspace user, faster enforcement proceedings, and better investigations leading to a sounder factual basis for legal and administrative decisions. Quesada's safety initiatives, which are half century old now, included more stringent regulation and increased inspection of pilots, additional equipage requirements for commercial aircraft, and more strict enforcement and detailed regulation of aircraft maintenance.

In recent times, ICAO has prescribed 8 critical elements for safety oversight system which includes the whole spectrum of civil aviation activities, including areas such as aerodromes, air traffic control, communications, personnel licensing, flight operations, airworthiness of aircraft, accident/incident investigation and transport of dangerous goods by air. The effective implementation of these critical elements is of paramount importance for safety oversight.

CE-1 primary aviation legislation: The Civil Aviation Act, 2015 and the Civil Aviation Authority of Nepal Act, 2053 are the major legislative framework of CAAN with respect to civil aviation. However, these two acts and associated regulations with them do not provide adequate authority for safety oversight functions.

CE-2 specific operating regulations: Much work has been done in this critical element in recent years. However, there is no effective system to ensure timely implementation of amendments to the SARPs of the annexes to the Chicago convention at present.

CE-3 state civil aviation system and safety oversight functions: CAAN is primarily responsible for aviation safety oversight in order to make the operation of national and international flights, aeronautical communication, air navigation and air transport services safe, regular, standard, and efficient.

Flight safety standards Department had been operational since long being in charge of regulatory functions with respect to personnel licensing, aircraft operations and airworthiness. However, the Air Navigation Services Safety Standards Department (ANSSSD) and Aerodrome Safety Standards Department commenced operations in 2009 and there is still no regulatory oversight of MET function.

Since ICAO audit of Nepal in 2009, CAAN has started giving adequate emphasis on the deployment of adequate manpower in oversight functions. On the whole, CAAN's oversight capability is getting better day by day.

CE-4 technical personnel qualification and training: The activities involved in safety oversight include a wide range of evaluation, inspections, analyses and interventions. So, effective implementation of these activities demands highly qualified personnel. CAAN has established minimum qualification and experience criteria for its staff who are assigned regulatory functions. Similarly, CAAN provides training to its regulatory staff on regular basis. However, training policy and developed training programme for its regulatory staff are still lacking.

CE-5 technical guidance, tools and the provision of safety-critical information: ICAO says its technical guidance can be utilized in preparing national regulations, procedures and practices. CAAN has provided its staff with state regulations and relevant ICAO documents according to their specialties as these have been developed for most of the civil aviation areas. However, in air navigation services, much work has to be done to adequately meet the requirements of the regulations.

CE-6 licensing, certification, authorization and approval obligation: ICAO has provisioned that the contracting states are required to issue licenses and certificates, as applicable, to aircraft, organizations and personnel engaged in international air navigation. In line with these provisions, CAAN has established a process for the certification of air operators based on the AOCR and FOR. There are established procedures for issuance of certificates in airworthiness of aircraft and aerodromes. With respect to licensing, CAAN has a system for the examination of various licenses and ratings. However, in terms of safety oversight in MET and SAR there is no oversight mechanism in place due to the lack of appropriately skilled staff.

CE-7 surveillance obligations: There is no doubt that the effective implementation of surveillance obligations such as inspections and audits are necessary to ensure that the established requirements are being met by the personnel and organizations performing aviation activities. Though CAAN has no structured surveillance programme yet, it is carrying out periodic, random inspections in personnel licensing, aircraft operations, and airworthiness of aircraft, air navigation services and aerodrome. The activities that are to be included in its surveillance programme are the ones that fall under Annex 18. In recent days, CAAN management has started giving importance to this critical element.

CE-8 resolution of safety concerns. The resolution of identified deficiencies and safety concerns is the core of any safety oversight activities. That is why, a good safety oversight system is required for the identification of deficiencies and safety concerns and appropriate action required for resolution. Here, CAAN lags behind as there is no effective system of tracking of identified deficiencies to ensure their timely resolution whether it is in aircraft operation, airworthiness of aircraft, air navigation services or aerodrome. Besides, surveillance programme developed by the regulatory departments are not comprehensive and do not provide a proper picture of problems affecting civil aviation. Moreover, an effective enforcement action is necessary.

Conclusion

CAAN has safety oversight system which covers all areas of civil aviation activities falling under its domain. However, to make its safety oversight functions more effective it has to improve in all eight critical elements.

References

- Safety oversight Manual, Doc 9734
- History of Aviation Safety Oversight in the United States
- Final reports on the safety oversight audit of the civil aviation system of Nepal, ICAO

ATC at work in Pokhara tower.
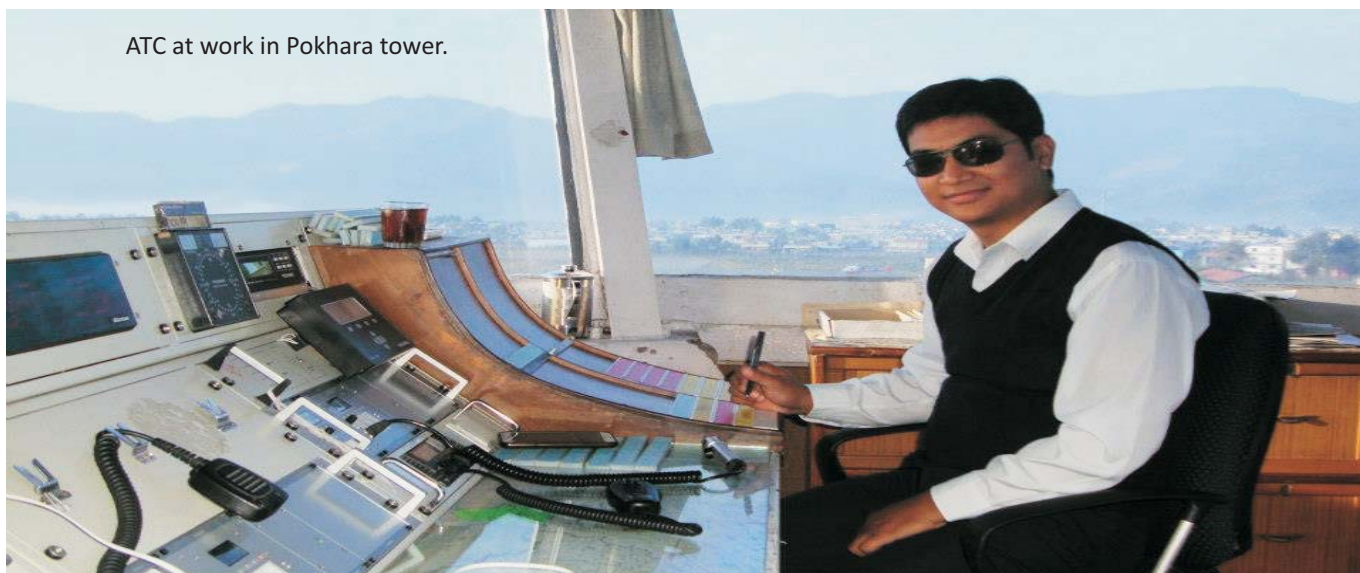
Law of Carriage: A Contract Perspective with Special Reference to the Air Carriage

We enter into contracts day after day. Taking a seat in a bus amounts to entering into a contract. It is applicable to all the modes of transport. Contract is an integral part of business transaction which has a vital role in its development. This is how we come up to the contract of carriage. It is necessary for the parties: service provider or the client, to understand what the contract, contract of carriage and some other related terms such as carriage, air carriage, conditions and the pertinent information thereof mean. The following definitions and explanation on the same may satisfy the query.

Law of carriage involves the contract which consists of some essential elements to be performed under some rules. They are also known as the law of contract.

Contract

Contract is a deliberate, and Elegally binding between two or more competent parties. Contract are usually written but may be spoken or implied,and generally have to do with or employment sale or lease, or tenancy. A contractual relationship is evidenced by (1) and offer (2) acceptance of the offer, and a (3) valid (legal and valuable) consideration.

The law of contracts differs from other branches of law in a very important respect. It does not lay down so many precise rights and duties which the law will protect and enforce; it contains rather a number of limiting principles, subject to which the parties may create rights and duties for themselves and the law will uphold those rights and duties. Thus, we can say that the parties to a contract, in a sense make the law for themselves.

Nepalese Contract Law defines a contract as an agreement enforceable by law concluded between two or more parties for performing or not performing any work.

Chapter 9, Section 65 states that (1) a contract relating to transportation shall be deemed to have been concluded if it provides for the transportation of goods from one place to another. (2) Except when otherwise provided for in the contract, the receipt to be issued by the transporter to the owner of goods for their transportation at the time of handling them over for the purpose of transportation shall be recognized as proof of contract between them. The Act further explains that 'transporter' means a person operating a transport service other than air or marine transport, or a person operating a business of such operation, and the term also includes a person operating the transport business through animal or any other means.

Provided that, in case any person employed by the owner of goods on wage basis or his/her agent or a person working under him/her transports goods, he/she shall not be recognized as a transporter for the purpose of this chapter. Despite of the above elements a contract may have some clauses therein relevant to the relationship between the parties.

Exemption clause

Besides the terms of the contract there are some provisions in the contract which make it more complex and difficult to implement without understanding them well. For example an exemption clause which may tend to limit the liability or the right of the parties to the contract; Exemption clause is a contractual provision providing that a party will not be liable for damages for which that party otherwise have ordinarily been liable.

Common in contract

The term "boilerplate" refers to standardized language in contracts. They are usually dumped at the end of the agreement under a title such as "Miscellaneous," "General," or "Standard." They affect how disputes are resolved and how a court enforces the contract. The effect of boilerplate is most often noticed when it is omitted from a contract. provisions are important because they affect your legal rights under the contract as much as all other clauses. Their purpose is to save the parties and drafters of contracts time with commonly used and understood language.

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Carriage

It is a Carriage of passenger and/or baggage, gratuitously or for reward. The term 'carriage' means transporting goods or passenger from one place to another that may be within or outside the country. Nepalese contract law includes carriage of goods and excludes carriage by air and marine. The person or firm who receives the goods for the purpose of carriage or transportation as a profession is called carrier. S. 5 of the Act expressly declares that the person employed for carriage on wage, or agent or person acting under are not the carrier for the purpose of the Act. In other words, any natural person or legal person or firm who conducts the profession of carrying goods as a business is carrier.

The law which regulates the relationship between the carrier and the owner of goods is called "law of carriage". In a broad interpretation of law of carriage, it includes carriage through land, water, sea or air. The receipt issued by the carrier to the owner of goods at the time of delivery of goods (to the carrier) is recognized as proof contracts between the owner and the carrier.

Nepalese contract Act does not define carrier and mention the types of carrier, though both the Act: Civil Aviation Act 2015 & CAAN Act 2053 define the "air service operator".

Types of Carrier
Common Carrier

A common carrier in ecommon-law countries is a person or company that

transports goods or people for any person or company and that is responsible for any possible loss of the goods during transport. A common carrier offers its services to the general public under license or authority provided by a regulatory body. The regulatory body has usually been granted "ministerial authority" by the legislation which created it. The regulatory body may create, interpret, and enforce its regulations upon the common carrier as long as it acts within the bounds of the enabling legislation.

A common carrier is distinguished from a contract carrier(also called a public carrier in UK English), which is a carrier that transports goods for only a certain number of clients and that can refuse to transport goods for anyone else, and from a private carrier. A common carrier holds itself out to provide service to the general public without discrimination for the "public convenience and necessity". A common carrier must further demonstrate to the regulator that it is "fit, willing, and able" to provide those services for which it is granted authority. Common carriers typically transport persons or goods according to defined and published routes, time schedules, and rate tables upon the approval of regulators. Public airlines, railroads, bus lines, taxicab companies, cruise ships, motor carriers, and other freight companies generally operate as common carriers.

All the Nepalese air carriers presently flying in the Nepalese sky with valid AOC fall under the category of the common carrier.

Rights of Common Carrier

1. Right of Reward
2. Right to Retain the Goods
3. Right of Advance Payment

Duties of Common Carrier

1. Acceptance of Goods
2. To Carry the Goods Safely
3. Common Route
4. To Obey the Instructions
5. In Time Delivery
6. Proper Place
7. Delivery To A Right Person

Liabilities of Common Carrier

A common carrier is liable to pay all the loss caused by him to the goods or persons. But in some special cases like an act of God, and act of war, public enemies he will be not liable.
1. Liability in case of wrong delivery.
2. Liability in case of negligence.

End of the carrier's liability

Except otherwise provided in the contract, the liability of a carrier comes to an end in any of the following circumstances:-
1. When the carrier delivers the goods to the owner or consignee or the person designated by the consignor.
2. When the consignor takes backs the goods.
3. When the carrier returns the goods to the consignor stating the reason why the goods cannot be transported because of fundamental changes in the situation.

Private Carrier

A private carrier is a company that transports only their own goods.ÊThe carrier's primary business is not transportation.

Contract of carriage

A contract of carriage is a contract between a carrier of goods or passengers and the consignor, consignee or passenger. It is a evidenced usually by an air waybill, or passenger ticket. Contracts of carriage typically define the rights, duties and liabilities of parties to the contract, addressing topics such as acts of God and including clauses such as force majeure. It comprises the declarations and provisions attached to the ticket and to the travel memo (itinerary and receipt) and these general conditions of carriage as well as notices to passengers.

Liability and Insurance concern

Liability is created when there is negligence on the part of any one of the parties to the contract or defective dealings thereof. Liability is a created even in case of tort.

Due to negligence of the carrier if any passenger is injured then carrier will be liable for the loss.

In terms of liability, S. 68 of Nepalese Contract Act limits the liability of carrier for any loss or damage. Except when the owner of goods or his/her agent has clearly declared at the time of concluding the contract that the goods to be transported are worth more than ten thousand rupees or except when otherwise provided for in the contract, the amount of compensation to be paid by a transporter for any loss or damage to goods transported by him/her shall not exceed ten thousand rupees. The carrier shall not be held liable for any loss or damage to precious goods or any other goods specified in prevailing law as those which have to be declared by the owner before their transportation, except when the owner or his agent has clearly declared them. S. 66 of the Act does not mention about the exemption of the carrier, but the section states only about the carrier's obligation.

It is an insurance requirement of AOCR under the Nepalese Aviation Legislation requiring insurance documents for obtaining Air Operator Certificate (AOC) and insurance of $ 60 million under the CAAN's regulatory mechanism as established by the Nepal Government's decision (Cabinet Level) dated 2053/03/22. $ 60 million is Combined Single Limit (CSL) for Third Party Liability to be insured of air carrier's liability for each aircraft.

Insurance against perils is an important aspect of international commercial transactions. In the event of loss or damage to cargo due to hazards during voyage, an insured party will be able to recover losses from the insurer. Such insurance forms include marine, aviation and land.

Aviation Insurance contracts may be divided into property insurance (hull insurance, cargo insurance, hovercraft insurance, spacecraft insurance and commercial aircraft insurance); liability insurance (airport owners and operators liability insurance); International Conventions applying to the carriage of goods by air include many international instruments ranging from the Warsaw Convention 929 to Montreal Convention 1999. These conventions together provide guidance to the domestic aviation insurance law.

Air Carriage

Air carriage refers to the transportation of passengers and/or baggage by air, together with any related services of carrier in connection with such transportation.

A Contract of air Carriage is a document that describes an air carrier's obligation to you, the passenger, in consideration of your ticket. These documents can be lengthy, but the details they contain are important. Your Contract of air Carriage will tell you the airline's flight cancellation policy varying from airline to airline.

Passengers on a journey involving an ultimate destination or a stop in a country other than the country of departure are advised that international treaties known as the Montreal Convention, or its predecessor, the Warsaw System may apply to the entire journey. For such passengers, the applicable treaty, including special contracts of carriage embodied in any applicable tariffs, governs and may limit the liability of the carrier.

Conditions for the Contract of Carriage

The Conditions of Carriage is a civil agreement that govern the relationship between you as a passenger and the carrier regarding your carriage on an aircraft pursuant to a ticket on which the Airline Designator Code appears for that flight or flight segment. Your rights and duties towards the air carrier and vice versa in this matter are outlined in the conditions of carriage. The air carriers supposes you to read the conditions of carriage carefully, as among other things, they set out various limitations that affect you, for instance concerning the limits of liability towards you in case of damage and delays affecting you and/or your baggage. If the limits of liability in the conditions of carriage are not satisfactory in relation to your needs, you can obtain personal insurance for the further coverage. The conditions may be summarized in bullet as under:

1. As used in this contract "ticket" means this passenger ticket and baggage check, of which these conditions and the notices form part, "carriage" is equivalent to "transportation", "carrier" means all air carriers that carry or undertake to carry the passenger or his or her baggage hereunder or perform any other service incidental to such air carriage.
2. Carriage hereunder is subject to the rules and limitations relating to liability established by the Warsaw

Convention unless such carriage is not "International Carriage" as defined by that Convention.
3. To the extent not to conflict with the foregoing, carriage and other services performed by each carrier are subject to: (I) provisions contained in the ticket, (II) applicable tariffs, (III) carrier's conditions of carriage and related regulations which are made part hereof (and are available on application at the offices of the carrier), except in transportation between a place in the United States or Canada and any place outside thereof to which tariffs in force in those countries.
4. Carrier's name may be abbreviated in the ticket, the full name and its abbreviation being set forth in carrier's tariffs, conditions of carriage, regulations or timetables: carrier's address shall be the airport of departure shown opposite the first abbreviation of the carrier's name in the ticket; the agreed stopping places set forth on the passenger's route; carriage to be performed hereunder by several successive carriers is regarded as a single operation.
5. An air carrier issuing a ticket for carriage over the lines of another air carrier does so only as its agent. If the carrier provides service to Passenger via a code share arrangement, such as travel on flights operated by a connection carrier, alliance member or other code share partner or its authorized agent will inform Passenger of the operating carrier at the time the reservation is made or at the latest during check-in.
6. Any exclusion of limitation of liability of carrier shall apply to be and be for the benefit of agents, servants, and representatives of carrier and any person whose aircraft is used by carrier for carriage and its agents, servants and representatives.
7. Checked baggage will be delivered to bearer of the baggage check. In case of damage to baggage moving in international transportation, complaint must be made in writing to carrier immediately after discovery of damage and, at the latest, 7 days from receipt; in case of delay, complaint must be made within 21 days from date baggage was delivered.

8. The ticket is good for carriage for one year from date of issue, except as otherwise provided therein, in carrier's tariffs, conditions of carriage, or related regulations. The fare for carriage hereunder is subject to change prior to commencement of carriage. Carrier may refuse transportation if the applicable fare has not been paid.
9. Carrier undertakes to use its best efforts to carry the passenger and baggage with reasonable dispatch. Times shown in timetable or elsewhere are not guaranteed and form no part of this contract. Carrier may without notice substitute alternate carriers or aircraft, and may alter or omit stopping places shown on the ticket in case of necessity. Schedules are subject to change without notice. Carrier assumes no responsibility for making connections.
10. Passenger shall comply with Government travel requirements, present exit, entry and other required documents and arrive at airport by time fixed by carrier or, if no time is fixed, early enough to complete departure procedures.
11. No agent, servant or representative of carrier has authority to alter, modify or waive any provision of the contract.

Carrier may reserve the right to refuse carriage to any person who has acquired a ticket in violation of applicable law or carrier's tariffs, rules or regulations.

Passengers have to have all required travel documents, such as passport. Besides the conditions of the carriage the carriers have to provide with some pertinent notices. Governments may require the carrier to provide information on or permit access to passenger data.

Notice of Liability Limitations

The Montreal Convention or the Warsaw Convention system may be applicable to the journey and these Conventions govern and may limit the liability of air carriers for death or bodily injury, for loss of or damage to baggage, and for delay.

1. Where the Montreal Convention applies, the limits of liability are as follows, however it has two-tier system of liability limit i.e. strict liability and unlimited liability:

2. Apart from unlimited liability, the strict liability is 1131000 SDR for death or bodily injury.
3. In respect of destruction, loss of, or damage or delay to baggage, 1,131 SDR per passenger.
4. For damage of passenger delay, 4694 SDR.

EC Regulation No. 889/2002 requires European Community carriers to apply the provisions of the Montreal Convention limits.

Nepal is not a party to the Montreal Convention 1999.

Where the Warsaw Convention system applies, the following limits of liability may apply:

1. 16,600 SDR for death or bodily injury, but 8,300 SDR where only the Warsaw Convention applies; but US requires the limit > US $75,000.
2. 17 SDR/ kg for loss of or damage or delay to checked baggage & unchecked bagg 332 SDR.
3. The carrier may also be liable for damage occasioned by delay.

Nepal is a party to the Convention so above provision is applicable in Nepal. Further information may be obtained from the carrier as to the limits applicable to the journey. If the journey involves carriage by different carriers, you should contact each carrier for information on the applicable limits of liability. Time limit for action: Any action in court to claim damages must be brought within two years from the date of arrival of the aircraft, or from the date on which the aircraft ought to have arrived. For Baggage claims: written notice to the carrier must be made within 7 days of the receipt of checked baggage in the case of damage, and, in the case of delay, within 21 days from the date on which it was placed at the disposal of the passenger.

Need of awareness

Reading your Contract of Carriage requires great patience and tolerance for legalese. Still, it's important to read this document, preferably before you book your flight. If problems occur, the contract of carriage will govern your airline's actions, so it's best to know your rights and your responsibilities in advance. It is said that the conditions of contract shape up the deed as the standard form of contract. Such contracts are usually prepared by the service provider, the air carriers or the grantor inclined to prepare in their own favour. Therefore, clients have to read those conditions written in such contract very carefully. In case of dispute arises between the parties, court decision is generally accomplished in consideration of the Contra proferentem rule of construction. The Law supposes equal treatment for both parties. When conditions are imposed upon one party there is no equality. Where there is absence of equal treatment to the parties there is absence of fundamental notion of bargain. In absence of awareness of these things weaker party, especially the consumer or recipient of the document, may feel cheated. Therefore, parties to the contract need to be aware of the terms of the contract, especially in case of standard form of contract. As to this rule, the words of a written instrument are construed more strongly against the grantor or maker thereof. The rule is used only when ambiguity comes or other rules of construction fail.

Nepalese Law especially the Contract Act 2000 does not state about the contract of marine and aviation transaction.

Conclusion

We come to conclude that the law of carriage holds the notion of contract. It has a prevailing role in any mode of transport. Parties involved in the carriage must be aware of the terms and conditions in the contract of carriage of any one of the modes of transport. As the aviation is of high-tech nature so the contract of carriage is designed accordingly. Therefore, parties to such contract of carriage need to exercise prudence while concluding the deed. The law of carriage regulates the relationship between the parties to the contract of carriage. Thus, it is central to every commercial transaction. It is significant for the aviation industry as well.

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CAAN Board Member and Staffs in Thiland

One Hundred and Nine Years

Wright Brothers' First- flight at Kitty Hawk, North Carolina

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Nine years ago, in 17 December 2003, the first flight centennial was celebrated through out the world. This is to say that one hundred and nine years ago, two brothers, Wilbur and Orville Wright, innovated the real history of aviation by flying a power–driven and fully-functioning heaver than air airplane in a place four miles south of Kitty Hawk, North Carolina of U.S.A on December 17, 1903. It was the first powered flight in a heavier-than-air machine; prior to that, people had flown only in balloons and gliders.

For the Brothers themselves, the task was not easy but a fruit of hard labor. They started the work, first, by designing series of gliders; however, realizing the relation of wind and machine, the duo gradually developed the concept of modern aeronautical engineering. They built wind-tunnel and be able to understand and analyze the nature of lift and drag in an aircraft. For this, they developed nearly two hundreds different wing designs. Eventually, they solved the problem that had been lingering for hundreds of years by inventing wind warping system-- combining it with yaw-control and rear rudder technology by making it steerable. They aided an internal combustion engine

to the plane. The important contribution of the Brothers was that they combined the both techniques: gliders, control but no power, and free flights, power but no control. Previous flights were either gliders or free flight. This system of wing warping made aircraft much easier to control, and only a decade later, in the First World War, heavier-than-air powered aircraft had become practical for reconnaissance, artillery spotting, and even attacking against ground positions of the enemies .This was the most significant development in the history of aviation. However, it was, in fact, not an accident but a deliberated long history of human efforts was there behind of this. On the auspicious day of Fourteenth Anniversary of CAAN, here, it would be worthwhile to have a short glimpse of aviation history of the world.

To see the beginning of the traceable history of flying machine, aircraft, besides the mythic stories on the subject, one has to reverse back to the Classic Greece where one can see a mathematician or rather a scientist named Archytas designing such a machine and trying to fly it. Archytas, a teacher of arithmetic and a scientist of the school, was born in, of present in 428 BC. He was reputed to have designed and built the first

artificial aircraft— perhaps a heavier than air self-propelled flying device. It was a bird-shaped model and was propelled probably by a jet steam. This machine flew some 200 meters—it is said. The details of this machine are not available.

Design for a flying machine by Leonardo da Vinci

Leonardo da Vinci is credited with having the first thought of a machine for vertical flight. His designs, called airscrew, near to helicopter, done in between 1488 to 1493 were only discovered in 19th century. Leonardo da Vinci (April 15, 1452 - May2, 1519) born in Italy, was a famous Renaissance Humanist ideal: a painter, scientist, writer, engineer, and many things more. He is the painter of famous portrait of Mona Lisa. Many years before the actual helicopter was built in
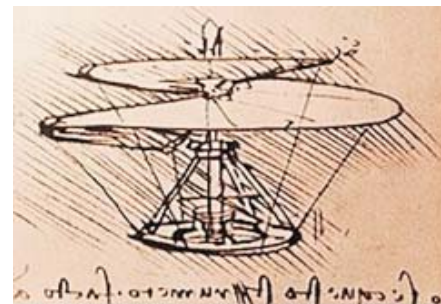
da Vinci's aerial screw

1940s, Leonardo de Vinci had sketched the predecessor to the modern day flying machine, especially helicopter, in the late fifteen century. In reality, he never actually built any flying machine, nor did he taste it; but his notes and drawings mapped out exactly how the flying machine, the helicopter, would operate.

The word aviation is actually derived from a Latin word avis for bird. Birds are always the inspiring symbol of aviation. In general, the term aviation denotes not only flying in the sky but also the design, development, production, operation and use of the aircraft – especially heavier than air.

Aviation, in modern sense, began with the first lighter-than-air flight on November 21, 1783. It was a hot air balloon designed by the Montgolfier brothers—a hundred and twenty years before the Wright brothers. Since the balloons can only travel downwind, the practicality of its flight was naturally limited. However, this inspired to invent the dirigible balloon; by using the technique, Jean-Pierre Blanchard flew the first human –powered dirigible in the sky in 1784, and crossed the English Channel by the same in 1785.

An art-work showing the first hot-air balloon flight in Annonay, France on June 4, 1783

Joseph and Jacques Montgolfier brother were the sons of a paper mill owner in Annonay, France, who invented the hot air balloon for the first time. They were trying to float bags made of paper and fabric, actually. When the brothers held a flame near the opening at the bottom, the bag expanded with hot air and floated upward. The Montgolfier brothers built a larger paper-lined silk balloon and

demonstrated it in the marketplace at Annonay, on June 4, 1783 . Their balloon, called Montgolfiere, lifted 6,562 feet into the air. It was a historical event. That was why, the Emperor Louis XVI and Marie Antoinette, accompanied with the French court, wanted to see it. Montgolfiere brother demonstrated the hot air balloon flight for the second times on September 19, 1783. That flight flew for eight minutes in front of the dignities carrying with passengers—a sheep, a rooster and a duck. After the succession of this passenger flight, Golfiere brothers inspired to operate a hot air balloon flight with human passenger on board. As a result, in its third flight, Pilatre de Rozier and Marquis d'Arlandes became the first human passengers on Montgolfiere hot-air balloon's flight on October15, 1783. A huge hot-air balloon of Montgolfiere carrying seven passengers flew to a height of 3,000 feet on the city of Lyons on January19, 1784. Actually, the balloon was flying because of hot air within the balloon; however, Montgolfier brothers had no proper idea about this scientific fact that the air inside the balloon would be more buoyant as it was heated. They supposed that it was because of an especial gas, lighter than air, caused the inflated balloons to rise.

Another significant name in ballooning, as mentioned earlier, is Jean Pierre Francois Blanchard (July 4,1753—March 7,1809). He was a French balloonist – who, not only made the aerial crossing of English Channel with a balloon, but also demonstrated the balloon flights in England, North America, Germany, Poland and Belgium. Blanchard was especially working on the design of heavier-than-air flying machines during the 1770s. However, following the demonstrations of hot-air-balloon flying by the Montgolfier brothers in Annonay, France, in 1783, Blanchard took up ballooning. After making a number of exhibition flights in Europe, Blanchard made the first balloon flight in North America, on Jan. 9, 1793. There, he ascended from the Washington Prison Yard in Philadelphia and landed in Gloucester county. This flight encouraged interest in ballooning in the United States. Blanchard returned to Europe and, with his wife Marie, who had also learned to fly balloons, performed many other exhibitions. However, the story of this innovator is tragic; once, when he was on a flight, Blanchard suffered a heart

attack and fell more than 50 feet; he never recovered from the fall. It was the February of 1808. His widow continued flying in balloons, but in 1819 she fell to her death when her hydrogen balloon was ignited during a fireworks display in Paris.

Thus, this couple of ballooning, became martyrs in the war of innovating the sky with the balloons.

s we have already talked that the invention of hot air balloon paved the way for the giant airships or dirigible, very few of us know that once it was a major means of air transportations. Once, it was very popular; what we called havaijahaj in Nepali is the direct translation of the same airship. It is a lighter than air aircraft as like the hot air balloon above; however, unlike the balloon, it can be controlled, it can be steered and propelled through the air using rudders and propellers. However, unlike other aerodynamic aircraft, viz. fixed winged aircraft or helicopter, which produce lift by moving wing through the air, airship is totally dependent for its lift on lighter gases. In fact, it is like a huge envelope filled with a gas that is less dense than the surrounding atmosphere. Hydrogen was used for this in its initial stage for a long time; nonetheless, because of the highly inflammability of hydrogen it is, indeed, very dangerous to use in an airship. Another lighter than air gas, helium was rare in most part of the world – except USA. After the tragic

disaster of Hindenburg, a giant airship, hydrogen had been gradually replaced by helium – as all modern airships use helium since 1960s.

A US Navy's Airship

Hindenburg a Germany passenger airship which was giant in size. Because of the inflammable hydrogen gas in it, it catch fire during its regular flight from Frankfort to New Jersey on Thursday, May 6, 1937. It had 97 people on board with 36 passengers and 61 crew members. There were 36 fatalities including one person on the ground; 62 other survived.

The Hindenburg disaster 1937

Civil aviation kicked-forth in its initiation since 1914 -- as the first scheduled air service began in Florida on Jan. 1, 1914. Nonetheless, that time civil aviation was not to the standard and significant. Commercial aviation was very slow to catch on with the general public, most of whom were afraid to ride in the new flying machines. Improvements in aircraft design also were slow. However, in its actual role, civil aviation emerged only after the First World War; before that, aircraft were generally used for war and military purposes. After its invention, the military value of aircraft was quickly recognized and production increased to meet the soaring demand for planes from governments on both sides of the Atlantic. In fact, an aircraft was used, covertly if not obviously, to be counted as a type of war weapons. Actually, in its early days, the development and production of aircraft was initiated not by any civil or public company but by

the army. It is said that an officer named J. E. Cooper from British war office visited the Wright Brothers to bring back information and skills on how to make an aircraft in 19004. Unfortunately, the Brothers asked a huge amount of wealth for delivering the method of aircraft, formulae and the theoretical knowledge on aircraft. Since the Office was unwilling to pay that amount, the deal was cancelled. However, ultimately, the British Army developed aircraft in 1908. Aircraft were used both by the Allied and Central Powers in the First World War. From October 1911, Italy began using aircraft for military purposes, particularly reconnaissance, in the Italian-Turkish War. Within one month, Italy realized they could bomb enemy positions using airplanes. Before the war broke out, light aircraft were primarily used to take photographs of enemy positions and occasionally drop bombs. However, as more and more planes took to the sky, pilots began to use side arms to shoot at each other. In World War I, airplanes and pilots found themselves engaged in full-fledged combat for control of the skies.

However, over the course of the war, major developments advanced the technology used in aircraft. There was enormous expansion of production of aircraft during this wartime: or rather before 1918. Thousands of companies -- like Avro, Bristol, Havilland, Hawker, Rolls Royce and Vickers-- were there just to manufacture the aircraft : not in thousands but in millions. Following the First World War, the world saw aircraft designers and other concern companies competing to push forward the traditional boundaries and making aeronautical technology broad at a rapid pace. The same story repeated in the Second World War as well. The United States of America, following the attack on Pearl Harbor in 1941, took a major increase in the production of airplanes. Over the course of the next three years during the war, more than 100,000 planes were constructed by the U.S. alone; this number is more than all other nations combined. The war was not only to increase the number of aircraft but also to develop new technologies, which added a new concept: the jet engine. Following the war, the jet would become the primary powerhouse for airplanes. The invention and development of Radar was another important technological development of Second World War. Another development

in civil aviation after the First World War I was the invention of seaplanes. Because of its utility—as it could accommodate large numbers of passengers between continents and only required a smooth body of water to land—seaplanes covered a large portion of civil aviation by the end of the First World War.

(Seaplane, a floatplane, landing on the water surface)

First, Glenn Curtiss designed a plane that could take off and land on water, because it did not need the heavy undercarriage required for landing on hard ground. Thomas Benoist, an auto parts maker, decided to build such a flying boat, or seaplane, to initiate air service across Tampa Bay called the St. Petersburg-Tampa Air Boat Line.

Seaplane is capable of taking off and landing on water; it is a powered fixed wing aircraft. The seaplanes that also can take off and land both on land and on water are called amphibian aircraft. Both, seaplane and amphibian have two categories based on their technical structure: floatplanes and flying boats. The main differences between the two are that floatplanes are usually smaller than the flying boat and in a floatplane, slender flats are mounted under the fuselage of the plane; during landing, only the floats of a floatplane come into contact with water where as in a flying boat the fuselage itself acts like a ship's hull in water and the fuselage itself comes in contact with the water.

After the First World War, the practical utilization of airplanes in civil aviation was conceived; consequently, registered airline services appeared. Aircraft began to transport people and cargo as designs grew larger and more reliable. The first passenger to fly in the sky was Charles Furnas, one of the mechanics of Wright brothers, on May 14, 1908. However, to fly in the sky using an aircraft was not approachable for the ordinary people; it was, indeed, only for the high people:

politicians, film stars and wealthy industrialists or businesspersons. To fly in the sky was very expensive and it was beyond the capacity of common people. Gradually, flying became a larger aspect of life all around the world; not just as a novelty adventure for the big people but as a mode of transport available to just about anyone. Aviation became a subject of major attraction of public interest during the period between first and second world wars. The development and advancement in airplane technology permitted the travel market to be flourished worldwide. Great progress was made in the field of aviation during the

A supersonic Concord plane in flight

1920s and 1930s. There were so many improvements to aircraft in the 1930s that many believe it was the most innovative period in aviation history. Air-cooled engines replaced water-cooled engines, reducing weight and making larger, faster planes possible. Cockpit instruments also improved, with better altimeters, airspeed indicators, rate-of-climb indicators, compasses and the introduction of artificial horizon, which showed pilots the attitude of the aircraft relative to the ground – important for flying in reduced visibility. The invention of radio was another mile-stone in aviation—it has an enormous importance for strengthening and modernizing civil aviation in present stage. After the first air traffic control tower established in Liberty International Airport, USA, in 1935, the use and importance of radio in aviation soared up. The Air Transport Association, ATA, was founded on Jan. 3, 1936.

Douglas DC-3 became the first airliner carrying passengers with profit; many airports were built in many towns and cities by the beginning of World War II; furthermore, innovations to aviation were carried out and numerous qualified pilots were produced, liquid-fueled rockets were discovered. Charles Lindbergh, a young American pilot, set out on an historic flight across the Atlantic Ocean, from New York to Paris on May 20, 1927. It was the first transatlantic nonstop flight in an airplane. This round the earth trip was completed in 33 hours, 29 minutes and 30 seconds; although it was a long and exhausted trip, but the pilot managed to remain awaked and fresh through the whole period of this historic flight. In the development of flying machine, civil aviation got yet another leap when the supersonic concord was invented. Flying at the speed of sound was made a reality when traditional rivals Britain and France collaborated to build the world's first Concorde, a jet that could traverse the Atlantic in just 3 hours, at twice the speed of sound, around about 1400 miles an hour. As the pace of civil aviation developed, countries like, UK, USA, France and USSR considered for developing a supersonic transport, and for that, companies in British and France were working to design and build such an aircraft. The design was constructed in the early 1960s but the cost seemed to be so high that the British

Companies looked for an international co-operation on this. As a result, as we have talked above, for this, both British and French companies collaborated. Further more, in another episode in aviation, the Boeing 737 twin-engine jetliner was to become Boeing's greatest success because of the fact that it has one of the lowest approach speeds of any jet transport and the minimum equipment required for refueling. In the new development in building aircraft for the purpose of civil aviation, the development of more sophisticated airplanes eventually made twin-engine, long-distance travel feasible. A new standard was introduced, known as Extended Range Twin-Engine Operation.

Thus, in conclusion, we can see that although the manifested physical presence of aviation is consigned within the tangible time -frame of one hundred and nine years now; however, the subdued history of civil aviation is hundreds of years old.

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Performance Based Navigation (PBN) and it's Implementation in Nepal: Some Initiatives and Future Plan

1. Background

The Thirty-sixth Session of ICAO Assembly, held in 2007, adopted the Resolution A36/23 which states, "All the contracting States should have a PBN implementation plan in place by 2009 to ensure a globally harmonized and coordinated transition to PBN by 2016." Nepal, as being one of the contracting States of ICAO , had to develop a PBN implementation roadmap and implement PBN operations into the Nepalese aerodromes and airspace according to the established schedule in the roadmap. So, CAAN developed 'Nepal PBN Implementation Plan, April 2011' which contains planned PBN activities of the country.

By introducing PBN System, the core element of which is GNSS technology, CAAN wishes to facilitate more skilled use of airspace and more flexibility for procedure design which, in integrated way, results in improved safety, capability, predictability, efficiency, economy, and environment- friendly.

2. What is PBN?

Performance Based Navigation (PBN) is the Area Navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace. The performance requirements are defined in Navigation Specifications in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept. p. I-(XX), Performance Based Navigation (PBN) Manual, Doc 9613, AN/937 Vol. 1, 3rd Edition, 2008

PBN is a pioneering thought which is basically dependent upon the use of Area Navigation () systems. It is an idea that blends the concept of Area Navigation (RNAV) and Required Navigation Performance (RNP) and brings the global harmony in the specifications and applications of RNAV and RNP system. Thus, PBN provides a set of globally compatible. These specifications are to be used as a basis for local or regional

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Navigation Applications in the en route, terminal and approach environments.

3. Comparison between Performance Based Navigation and Conventional Navigation

Comparison table below gives overall idea about the benefits of PBN over Conventional Navigation. It also helps to understand why ICAO giving emphasis on the implementation of PBN concept in Civil Air Transport System; and is assisting and encouraging Contracting States to develop the State PBN Implementation Roadmap and implement the planned activities accordingly.

S. No.	Particula	Conventional Navigation	Performance Based
1	Infrastructure Aspects	Compulsory need of installation of ground based infrastructures like VOR, DME, NDB, ILS, etc.	On-board and satellite based infrastructures are sufficient for aircraft navigation. However, the application of ground based navigation is also possible. (GNSS and/or some other on-onboard equipment like INS, IRU, FMS, etc including different navigation sensors are required.)

2	Operational Aspects	Visibility minima can be high. So, the chances of aircraft diversions and go -around are high.	Visibility minima can be significantly reduced thereby possible reduction in aircraft diversions and go around-manoeuvres.
		Aircraft avionics cannot be appropriately utilized and therefore the navigation is inefficient.	Most appropriate use of avionics is possible and therefore, it Increases the efficiency of aircraft operation.
3	Procedural Aspects	Complex and inflexible procedures, unstable approaches, more CFIT related occurrences Routes are usually longer as they have to pass over the ground based NAVAIDS. Usually the bigger protection area covering more terrain and topography to be evaluated.	Flexibility in designing the procedures reduces the procedure complexities, easy mane uverability and enhanced safety. Routes are more direct as they pass through the waypoints. Locations of waypoints can be fixed as per the operational need. Relatively smaller protection area covering lesser terrain and topography to be evaluated.
4	Environmental Aspects	Longer route, complex procedures and therefore, tougher energy management and more fuel exhaust in the environment	Good energy management therefore less fuel consumption and less Carbon emission, and therefore more environment friendly.
5	Investment Aspects	High investment on ground based infrastructures, longer routes, less cost effective	Investment on ground based infrastructures is relatively very low or almost none. Routes are relatively shorter. Hence, more cost effective.

4. Existing Provisions and Future Plan

- Issuance of AIC 001/2011 'ATC Requirements for PBN in Nepalese Airspace'
  This AIC was issued with the aim of providing information and guidelines concerning the introduction of Performance-based navigation (PBN) operations in Nepalese FIR and became effective from 1 September 2011. This AIC provides the basis for establishing the ATC Procedures in case of Performance Based Navigation Operation.

- Issuance of PBN Operational Approval Handbook
  CAAN developed PBN Operational Approval Handbook in October 2011

which came into effect from 30th November 2011. This handbook supplements the information contained in the ICAO PBN Manual (Doc 9613) and has been developed for the purpose of providing the guidance to the national operators and to the personnel responsible for the assessment of the applications for operational approval to conduct PBN operations into Nepalese FIR.

- Implementation of Nepal PBN Implementation Plan
  i. CAAN formulated Nepal PBN Implementation Plan and submitted to ICAO APAC Office in Apr 2011.
  ii. Later after the feedback from ICAO, CAAN developed the modified version of Nepal PBN Implementation Plan Apr

2011 V 1.0 in July 2012 and submitted to ICAO for final review.
iii. The plan has three phases: Short Term (2010–2012), Medium Term (2013–2016) and Long Term (2017–2025).
iv. Short term plan is finishing soon by the end of December this year and within this period, Nepal intended to extend and redefine L626 (RNP10) route direct to Western destinations without overflying Delhi in consultation with India. Basic RNP1 STARs for transitioning from en-route to approach mode have been implemented in Terminal Operations at Kathmandu and Biratnagar Airports. Design of RNP AR APCH for TIA and RNP APCH for Biratnagar Airport were developed in this phase which

came into effect since 28 June 2012. AIP AIRAC Supplements S010/2012 and S011/2012 were issued to notify all concerned about the Implementation of RNAV/GNSS STARs and APCH Procedure at Biratnagar Airport (Figure 1 and 2) and Implementation of RNP AR APCH Procedure and associated STARs at Tribhuvan International Airport respectively.

- Qatar Airways has been performing the RNP AR APCH at TIA since 1st October 2012. Some other international operators like Fly Dubai, Korean Air, China Southern and Air China are also interested in this approach. Hopefully, they will soon apply for the authorization to execute this approach.

- As far as the RNP APCH of Biratnagar Airport is concerned, none of the domestic operators have applied for the approval process. However, some rumors are heard that some of the operators are practicing this procedure unofficially in reality.

ii. In medium term, CAAN intends extend L626 route to MECHI to materialize the proposed Himalayan Route in consultation with India. CAAN also wishes to develop new RNAV5 routes as part of future ATS route network for Domestic operations (Figure 3). RNAV1/RNP1 STARs and RNP APCH (LNAV) will be introduced in some major airports like Bhairahawa, Pokhara, Nepalgunj, Simara and Chandragadi.

iii. In long term, CAAN intends to redefine its selective ATS routes like B345, G348, R325 as RNAV5 routes in consultation with adjacent FIRs as a process of transitioning from conventional to PBN route structure. RNP1 STARs/SIDs will be fully implemented in all major airports and overall terminal operations will be fully transitioned to PBN operations by 2025.
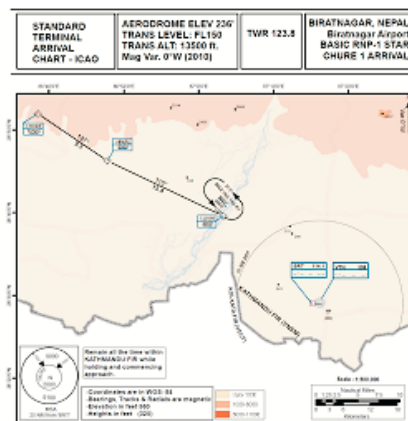

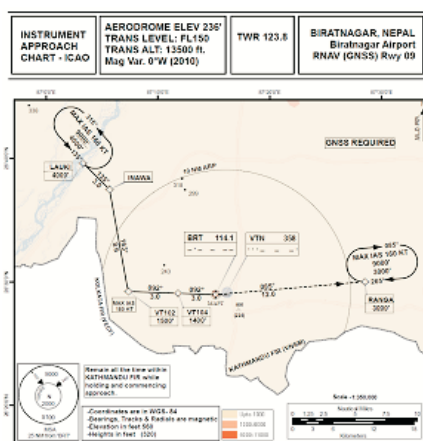Figure 1. RNAV Star at Biratnagar Airport

Figure 2. RNAV (GNSS) APCH at Biratnagar Airport
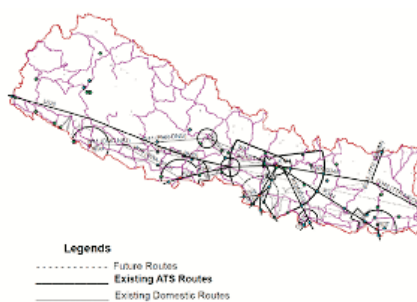
Figure 3. Existing and Proposed ATS Route Network within Kathmandu FIR

5. Manpower Development Initiatives

CAAN has given PBN related trainings to a number of personnel in Flight OPS and ATM/ATS in OPS Approval and Procedure Design. It seems that the initiatives taken so far are not much encouraging due to the statements as mentioned in Para 6 and 7 in the next page. Mechanism

within the CAAN is not much proactive to extract the possible output from those who are already trained in their respective field; only limited personnel among them are observed to be assigned for active participation in the campaign.

List of number of personnel that have taken PBN related training and participated in PBN related workshops and seminars in last five years is given below.

S.No.	Title of Training Course/Seminar/Workshop	Number of Participants
1.	PANS OPS Basic Training (which is the basis for participation in PBN Procedure Design Course)	9
2.	PBN Procedure Training	8
3.	PBN Operational Approval Training	2
4.	RNP AR Procedure Design Training	3
5.	PBN Oversight Training	7
6.	PBN Workshops	2
7.	PBN Seminars	2

Despite the above list, one-day PBN Training Course was conducted in Kathmandu by ATM Expert from QUOVADIS focusing on RNP AR for TIA ATS personnel (about 30 in number) in three sessions from 12-14 December 2011. Similarly, TIA ATS personnel (32 in number) were given in-house RNP AR APCH Simulation Training in July 2012 at CAA ATC Simulator at Sinamangal.

6. Major hurdles in PBN Implementations

As Performance Based Navigation concept is very new in Nepalese context and even for most of the parts of the world, there are lots of dilemmas that exist in the planning and implementation of the concept in reality. The major hurdles behind are:

- Inadequate motivational and promotional activities for the execution of PBN operations from CAAN especially in the field of Flight OPS and Airworthiness disciplines. Some regulatory requirements for different NAVSPECS of PBN operations yet to be released.

- Lack of proper cooperation, coordination and integrated effort in the process of transitioning from Conventional to PBN environment.

- Reluctance to participate in the campaign of adopting PBN technology into flight operations on operators side

- Slow development of PBN flight procedure designs
- Insufficient interaction, awareness and education program from the CAAN side before and after the publication of the flight procedures and other necessary requirements.

7. Major reasons behind the hurdles

Major reasons behind the above hurdles are:

- Limited experience (in handling the PBN Operations as the concept is very new) and therefore, lack of confidence in execution part
- Insufficient Trainings and/or On the Job Trainings and Trained Manpower (flight Crew, Airworthiness & Flight OPS Personnel, ATC, Procedure Designers, etc).
- Limited On-board Infrastructures and cost involved in upgrading the aircraft equipage
- Poor Procedure Design Infrastructures like design room, design software, design computers, etc

8. Recommendations

The pace of PBN implementation activities can be fostered by addressing the major hurdles to PBN Implementation Programme and the associated reasons behind them. However, recommendations focused on the improvements in following major areas are given below:

- Train and educate the manpower to boost up the skills and confidence level. Necessary trainings to Flight Crews, Flight OPS and Airworthiness people, Air Traffic Controllers, Procedure Designers, etc are desirable. Responsible agencies shall arrange the necessary basic trainings or OJTs or Refreshers Training, in-house or abroad, to their personnel engaged in promoting the PBN Operations.

- Operators to be encouraged to upgrade the aircraft capability thereafter motivating them to employ the PBN procedures into practice so that they can render safe, efficient and economical service to the passengers.
- Establish separate Procedure Design Office and facilitate it. By providing the separate room for Procedure Design Office fully equipped with sufficient trained manpower, design software and computers will motivate the personnel involved in the Procedure Design Work.
- CAAN to conduct essential motivational and promotional activities. Activities like Interaction Program, Workshop, Seminar, Awareness Programme, etc on the PBN Implementation Issues are to be conducted so as to educate and aware responsible aviation stakeholders. At least, triangular interaction among Flyers, ATCs and Procedure Designers are highly desirable in this type of program.
- Proper cooperation, coordination and integrated effort are the most fundamental basis for the foundation of the successful PBN Programme. So, each stakeholder in the scene shall contribute best from his/her side to make the programme success.

9. Conclusion

Mixed Navigation (Conventional + PBN) may introduce confusion and complexity in the Aircraft and ATC operation in the beginning but as the time passes, every stakeholder involved in the campaign will gain some knowledge and confidence through training and experience. Also, there will always be the enough rooms for the enhancement of the Flight Procedures and Procedures of

Operation to make procedures user-friendly; and finally, the users will be self-motivated to adopt changes that arise after the implementation of PBN technology.

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Aircraft emissions in Nepalese sky

"Your personal contribution of CO_2 during this travel (Kathmandu-Bangkok-Kathmandu) is almost 366 kg", one participant told me during lunch hour at ICAO regional office. It was an interesting as well as an alarming figure of which I was not aware till that date. Thanks to ICAO carbon emissions calculator available in its website (http://www.icao.int/environmental-protection/CarbonOffset/Pages/default.aspx), one can calculate his attribution of emissions to his air travel. It is an effort of ICAO to make people aware about aircraft emission and their individual attribution to it.

What is an aircraft emission?

The environmental impact of aviationoccurs because aircraft engines emit noise, particulates, and gases which contribute to climate change and Global warming. Despite emission reductions from more fuel-efficient and less polluting turbofan and turbo engines, the rapid growth of air travel in recent years contributes to an increase in total pollution attributable total pollution attributable to aviation.

While the principal greenhouse gas emission from powered aircraft in flight is CO_2, other emissions may includenitric oxide and nitrogen dioxide, (together termed oxides of nirtogen or NOx), water vapour and particulars (soot and sulfate particles), sulfur oxides, carbon monoxide (which bonds with oxygen to become CO_2 immediately upon release), incompletely burned hydrocarbons , tetra-ethyl lead (piston aircraft only), and radicals such as hydroxyl, depending on the type of aircraft in use. The contribution of civil aircraft-in-flight to global CO_2 emissions has been estimated at around 2%.

Different types of emission

Carbon dioxide (CO_2) - CO_2 emissions from aircraft-in-flight are the most significant and best understood element of aviation's total contribution to climate change. The level and effects of CO_2 emissions are currently believed to be broadly the same regardless of altitude (i.e. they have the same atmospheric effects as ground based emissions). In 1992, emissions of CO_2 from aircraft were estimated at around 2% of all such anthropogenic emissions, and that year the atmospheric concentration of CO_2 attributable to aviation was around 1% of the total anthropogenic increase since the industrial revolution, having accumulated primarily over just the last 50 years.

Oxides of nitrogen (NOx) - At the high altitudes flown by large jet airliners around the , emissions of NOx are particularly effective in forming (O3) in the upper . High altitude (8-13km) NOx emissions result in greater concentrations of O3 than surface NOx emissions, and these in turn have a greater global warming effect. The effect of O3 concentrations is regional and local (as opposed to CO_2 emissions, which are global).

Water vapour - Hydrocarbons in oxygen are water vapour, a greenhouse gas. Water vapour produced by aircraft engines at high altitude, under certain atmospheric conditions, condenses into droplets to form , or contrails. Contrails are visible line clouds that form in cold, humid atmospheres and are thought to have a global warming effect (though one less significant than either CO_2 emissions or NOx induced effects). Contrails are extremely rare from lower-altitude aircraft, or from -driven aircraft or rotorcraft.

Particulates - Least significant is the release of soot and sulfate particles. Soot absorbs heat and has a warming effect; sulfate particles reflect radiation and have a small cooling effect. In addition, they can influence the formation and properties of clouds. All aircraft powered by combustion will release some amount of soot.

Kyoto Protocol and international aviation emissions

The Kyoto Protocol (1997) to the (UNFCCC) sets binding obligations on industrialized countries to reduce emissions of . The Protocol, which entered into force on 16 February 2005 (and recently extended till 2020), requires industrialized countries to reduce their collective emissions of six greenhouse gases, the one most relevant to aviation being carbon dioxide (CO_2). International aviation emissions are currently excluded from the targets. Instead, Article 2, paragraph 2 of the Kyoto Protocol states that the responsibility for limiting or reducing greenhouse gas emissions from aviation bunker fuels shall fall to some parties, working through ICAO.

Aircraft emission and Emission Trading Scheme (ETS)

At the beginning of this year, there was a huge debate in aviation sector when European Union brought on EU's Emissions Trading Scheme (EU ETS) which was established in 2003 by Directive 2003/87/EC and started operation on 1 January 2005. Initially the EU ETS included only land based industrial installations. From 1 January 2012, flights arriving at and departing from EU Community aerodromes were also included in the scheme for greenhouse gas emission allowance trading within the Community. However, In November 2012, as a gesture of goodwill in support of an international solution, the European Commission proposed deferring the application of the scheme to flights into and out of Europe until after the ICAO General Assembly in autumn 2013. It has just come as a temporary relief to operators and all eyes are set for the upcoming ICAO GA. EU, in its statement

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Manager, CAAN Head Office

has said, "Following encouraging discussions in the ICAO Council on a global market-based approach to regulating greenhouse gas emissions from aviation, the Commission has believed a global solution is within reach at the 2013 meeting".

Global effort for reducing aviation emission

It is estimated that total CO_2 aviation emissions is approximately 2 % of the Global Greenhouse Emissions and it is expected to grow around 3-4 per cent per year. By 2020, global international aviation emissions are projected to be around 70% higher than in 2005 even if fuel efficiency improves by 2% per year. ICAO forecasts that by 2050 they could grow by a further 300-700%. Aircraft emission is not just a concern of a particular country and hence any particular country alone cannot mitigate its effect. For this, a global agreement is urgently needed because CO_2 emissions from the aviation sector are growing rapidly.

Action by stake holders in reducing emission

Many countries as well as concerned stake holders (e.g. ICAO, FAA, IATA) are applying many measures to minimize the contribution of emissions from aviation. Some of the measures are,
- Enhancements and modifications to existing in-service fleet
- Accelerate fleet renewal, introduce latest technologies, including drop-in bio-fuels
- Radical new technologies / designs (long term).
- Improved operations can save fuel and CO_2 by up to 6% per year (IPCC)

- Compiling best practices, publishing guidance, monitoring airlines, training and education
- IATA Green teams saved 22.5 million tones of CO_2 since 2005 (saving $5.6 billion) and another 18.8 million tones of CO_2 savings identified (saving $4.2 billion)
- Single European Sky, US Next Gen Air Transport System and flexible airspace access would contribute to these savings
- Global approach by governments to reducing aviation emissions, not through a patchwork of individual policies:
- Carbon emissions to be centrally monitored to ensure emitters are held accountable just once for their emissions
- Continuous Descent Arrival, direct ATS routes (which is possible by implementing PBN concept), Air Traffic Flow Management (ATFM)

We can take a good example of China. CAAC was able to shorten air routes by 16 thousand km and able to save 88 thousand tons of fuel with 275 thousand tons of carbon dioxide being reduced. They are also implementing measures to reduce taxing time on runways by at least three minutes thus saving a total of 250 hours daily.

Nepalese scenario

Aviation in Nepal is relatively a small contributor of the emissions blamed for global warming. But, as its share is growing day by day with the increasing flight movement, we need to draw attention of all stake holders to act on reducing the emission. In our context, there has not been any substantial

research or discussion about the amount of aircraft emissions. But, in many ICAO forums, CAAN has been trying very hard for the implementation of direct ATS routes to minimize the fuel consumption and reduction of carbon emission. Introduction of RNAV route L-626 and lobbying for direct routes (Himalaya-1, Himalaya-2 and Trans-Himalayan routes) are some of the efforts initiated by CAAN in addressing the aircraft emission issue.

Domestic operation in Nepalese sky use turboprop planes which use a gas-powered turbine engine with a propeller that controls their velocity, making them more efficient than their jet counterparts burning up to 40% less fuel per hour. That means less cost and less carbon footprint. Whereas, the contribution of International flights (as they operate larger Jet aircraft) is high considering relatively low movement.

What is the amount of CO_2 emission in Nepalese sky per day?

Calculating carbon dioxide emissions - When fuel oil is burned, it is converted to carbon dioxide and water vapour. Combustion of one kilogram of fuel oil yields 3.15 kilograms of carbon dioxide gas. Carbon dioxide emissions are therefore 3.15 times the mass of fuel burned.

Based on the flight movement data available in Civil Aviation Report-2011, contribution of CO_2 emission in Nepalese sky in 2011 can be estimated as follows,

Table 1: Flight movement in 2011 and estimated emission

Flights	Total flight movement*	Average flight hour**	Fuel Consumption	CO2 emission***
International	22792	25 min	7,71,11,034 kg	24,09,71,981 kg
Domestic	94960	40 min	3,79,84,000 kg	11,87,00,000 kg
Total	--	--	11,50,95,034 kg	35,96,71,981 kg

*   Flight movement from TIA and hub airports has been included

**   Average flying time has been used

***   For bigger aircraft, for a 25NM/ 3 min flight, fuel consumption = 406 kg and CO2 emission= 1250 kg (ICAO route catalogue). Average fuel consumption for turbo prop aircraft has been taken as 10 kg/min, CO2= 31.25/min

From table-1, we can estimate that in 2011, fuel consumption in Nepalese sky was 3, 15,328 kg/ day) and CO2 emission was 9,85,402 kg per day. This figure gives an alarming scenario regarding carbon emission contribution from aviation sector in Nepalese airspace which is un-noticed till date.

What can be done to reduce the aircraft emission

There are short term and long term effort to reduce the aircraft emission. Being a technically poor country, Nepal's effort is very much limited in reducing emission, but even small effort can make a huge contribution. Some of the initiative we can take can be as follows,

- Introducing more efficient and direct ATS routes, direct STARs, continuous descend approach
- Introducing ATFM to avoid un-necessary holdings on ground as well as on the air
- Lobbying for direct trans Himalayan and Himalayan routes
- Educating all stake holders about the amount of emission and its probable effect on the atmosphere

As the emission by aviation activities is a global concern and an individual state cannot do much in reducing it, a global approach by governments is required. However, realizing the amount of emission and its impact on environment, CAAN should take initiative to educate stake holders and try its best to minimize it.

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We are about to cross the river below to reach the other end of prosperity and possessions of the nation.

Understanding Stress and Workplace Stress

Stress is normal. Everyone feels stress related to work, family, decisions, your future, and more. Stress is both physical and mental. It is caused by major life events such as illness, death of a loved one, change in responsibilities or expectations at work, and job promotions, loss, or changes. Smaller, daily events also cause stress. This stress is not as apparent to us, but the constant and cumulative impact of the small stressors adds up to big impact. In response to these daily stresses, your body automatically increases blood pressure, heart rate, respiration, metabolism, and blood flow to your muscles. This response is intended to help your body react quickly and effectively to any high-pressure situation.

However, when you are constantly reacting to small or large stressful situations, without making physical, mental, and emotional adjustments to counter their effect, you can experience stress that can hurt your health and well-being. It is essential that you understand both your external and internal stress-causing events, no matter how you perceive those events.

Stress can also be positive. You need a certain amount of stress to perform your best at work. The key to stress management is to determine the right amount of stress that will give you energy, ambition, and enthusiasm versus the wrong amount which can harm your health and well-being.

Important Stress Causing Issues, Characteristics and Traits

While each person is different and has different events and issues that cause stress, there are some issues that almost universally affect people. These are the stressors you most want to understand and take measures to prevent.

A. Feeling out of control,
B. Feeling direction-less,
C. Guilt over procrastination or failing to keep commitments,
D. More commitments than time,
E. Change, especially changes you didn't initiate or institute,
F. Uncertainty, and
G. High expectations of self.

What Affects Your Coping With Stress Skills?

During times of stress and uncertainty, you can anticipate some predictable issues, problems, and opportunities. For instance, during any change, members of an organization have:

1. Different ways of regarding change. Some people have difficulty accepting and adjusting to change and uncertainty; others will relish the changes and view them as great opportunities. Some people initiate change; others prefer the status quo.
2. Different amounts of experience and practice in stress management and change management. (What is devastating to one individual may excite another or only mildly irritate a third person.) Theoretically, people become better at managing stress and change with experience.
3. Some people need to "talk it out." Others suffer silently. Some find relief in complaining. Some talk and talk and talk, but are really supportive of the change. Others find ways to sabotage changes and undermine efforts to move forward.
4. Different levels of stress and change occurring in other areas of their lives.

During change, people will experience different amounts of impact from the current changes and stress producing situations. The will also experience different amounts and types of support from their spouse, significant other, friends, supervisor, and coworkers. Here are additional thoughts about what affects your ability to cope with stress at work. All of these and other issues impact your ability to manage workplace stress and change, to continue to function productively. It is important to recognize that people who are experiencing serious stress and change may not be capable of performing exactly as they were in the past. Stress can cause physical, emotional, and behavioral problems which can affect your health, energy, well-being, mental alertness, and personal and professional

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Manager, CAAN Head Office

relationships. It can also cause defensiveness, lack of motivation, difficulty concentrating, accidents, reduced productivity, and interpersonal conflict. Too much stress can cause minor problems such as sleep-loss, irritability, backaches, or headaches, and can also contribute to potentially life-threatening diseases such as high blood pressure and heart disease.

During stressful times or situations, people often blame themselves for being weak or for their inability "to handle it." Often managers in organizations do not understand the normal progression of change or stress-producing situations and they expect employees to immediately return to total productivity after a stressful event and it doesn't happen normally.

Stress Results From Change

People have deep attachments to their work groups, organizational structures, personal responsibilities, and ways of accomplishing work. When any of these are disturbed, whether by personal choice or through an organizational process from which they may feel quite removed and un-involved, a transition period occurs. During this transition, people can expect to experience a period of letting go of the old ways as they begin moving toward and integrating the new. When you consider stress in the workplace, understanding these components about stress, situations that induce stress, and employee responses to stress, can help you help both yourself and your staff effectively manage stress and change.

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Operational Challenges and Revenue Status: Tenzing Hilary Civil Aviation Office , Lukla

Lukla airport, an aerodrome flight information station (AFIS) situated at the gate way of Mount Everest and many other mountains, is one of the well known major tourist destinations in Nepal. As a major touristic entry/exit point Lukla airport is the only option for trekkers who choose air travel. DHC-6, D-228, P-750 type fixed wing aircraft and helicopters of various types operate schedule and charter flights.

Established in 1971 by Sir Edmund Hillary, having runway length of 527meters and breadth 20 meters at an elevation of 2843 meters, Lukla airport faces several operational challenges. One of the major challenges is its topography. It is surrounded by high impassable hills and mountains which makes flight operation highly challenging. Moreover, it is situated in a narrow valley on the bank of Dudhkoshi River allowing only limited airspace for aircraft to maneuver. The situation becomes even critical when the aircraft has to go around while landing from runway 24 and is almost impossible to do so when the aircraft is on short final. The runway is one way landing and takeoff (Landing runway 24 and take off from 06) and unfavorable wind blows most of the time from south western direction which is direct tail wind for runway 24 and airport operation has to be closed very often when tailwind exceeds 10 knots.

Limited parking space is another major problem at this airport. Currently four fixed wing aircraft and five rotor wing aircraft can be accommodated at a time in its full capacity. It is not an unusual phenomenon for aircraft to hold in the air waiting for parking space to be available. Its capacity has been fully utilized as there is no further space available under the possession of CAAN for further extension of runway, parking and other physical infrastructures.

Secondly, the weather of Lukla is unpredictable and one has to rely on his/her conventional experience for weather forecast. As the changes drastically, it takes no time for the visibility to reduce from 10km to nil mainly due to the fog that lifts off from the Rive. Therefore, air traffic controllers and pilots have to be very careful in assessing the weather condition, have to be alert all the time, have to maintain good coordination with each other and always be prepared for the alternative course of action to be taken in case of weather deterioration below VMC.

We witnessed the bitter consequences of Lukla weather in last October and November when Lukla airport remained closed for thirteen days which left thousands of tourists stranded drawing the attention of national and international media. This year we have the highest record of airport closure for nine consecutive days in July and five consecutive days in October. Since October is the beginning of tourist arrival season and airport closure period coincided with it, this year also more than two thousand tourists were unable to fly to Lukla and had to change their destination owing to adverse weather. Comparatively the impact of airport closure in July this year was not that severe as there was no significant passenger movement.

The operational challenges mentioned above are natural rather than man made. We cannot change them but to conduct the operation considering these challenges by developing operating procedures, imposing operational limitations, conducting safety awareness among stakeholders and adopting other appropriate measures as necessary to ensure that flight safety is not compromised in any way are needed for safe operation at Lukla airport.

Considering the past accidents, incidents and in order to enhance flight safety CAAN has developed and implemented standard operating procedure for fixed wing aircraft at Lukla as follows;
1. While disseminating the weather of Lukla, normally the general weather should be passed, considering the entire sector of Lukla Airport including significant weather.

Rinji Sherpa
Airport Chef
Tenzing Hillary CAO, Lukla.

2. If the ATS Officer of Lukla Tower is able to see beyond the second ridge of south west, then only 5000 m visibility or more is to be declared.
3. Considering the minimum requirement of visibility is 5000 m and ceiling height is 1500 ft for VFR operation. The ceiling height is considered 1500 ft if and only if the base of the cloud is above the top of 10500 ft hill.
4. Declare the closure of airfield operation if the visibility is less than 5000 m and ceiling height is less than 1500 ft.
5. Significant weather, if present, towards the north side of Lukla Airfield should be passed to the aircraft.
6. Lukla airfield should be declared closed for arrival aircraft if the tail wind exceeds 10 knots.
7. Airfield should be declared closed if the intensity of the rain is light.

Despite the challenges and constraints, Lukla airport has good prospects in aeronautical revenue generation. Revenue of last three fiscal years show encouraging data as the yearly income is in increasing trend every year which is a matter of satisfaction compared to the manpower deployed and it has been earning more than its expenditure, however, flight movement and passenger movement is fluctuating. Current total staff strength is ten including three daily wages basis staff.

Civil Aviation Authority of Nepal
Tenzing Hilary Civil Aviation Office Lukla
Yearly Flight Movement Data Year 2010

Months	Total Aircraft Movement	Total Pax Movement		Total Cargo Movement	
		In	Out	In	Out
January	678	1618	2682	171568	2645
February	724	2176	1471	138502	401
March	1428	5763	3178	155953	360
April	1970	6927	7379	248052	2906
May	1810	3330	5671	280269	18619
June	452	1112	1597	103485	19859
July	242	763	1037	53608	2310
August	302	790	777	74828	1240
September	826	3290	1455	84001	1650
October	2944	11351	8986	206355	3725
November	2376	5437	9239	354551	11685
December	1128	2521	3461	247491	4700
Grand Total	14880	45078	46933	2118663	70100

Civil Aviation Authority of Nepal
Tenzing Hillary Civil Aviation Office,Lukla
Yearly Flight Movement Data Year 2011

Months	Aircraft's Movement (with Heli.)	Helicopter's Movement	Total Pax Movement		Dollar Pax Out	Total Cargo Movement (KG)	
			In	Out		In	Out
January	638	90	1307	2174	950	174159	1615
February	842	90	2033	1382	679	229446	92
March	1460	226	5149	3144	2088	281507	1300
April	2372	692	8698	7209	5765	240443	4978
May	1720	582	3313	6617	4175	311894	17381
June	542	48	1187	2052	732	163222	20420
July	242	34	474	637	196	67707	1055
August	832	30	1148	1061	346	397301	11364
Septembe r	1144	116	3786	2260	1163	313037	1654
October	2828	688	13121	6375	7695	190093	6995
November	1738	548	4275	8492	6943	313914	12562
December	1050	252	2893	4505	2395	207143	4534
Grand Total	15408	3396	47384	45908	33127	2889866	83950

Civil Aviation Authority of Nepal
Tenzing Hillary Civil Aviation Office, Lukla
Yearly Flight Movement Data Year 2012

Months	Aircraft's Movement (with Heli.)	Helicopter's Movement	Total Pax Movement		Dollar Pax Out	Total Cargo Movement (KG)	
			In	Out		In	Out
January	566	158	1495	2034	1132	96654	2883
February	552	132	2209	1394	818	69062	95
March	1434	404	5965	3480	2493	124386	1768
April	2364	886	7874	8015	5920	223228	3973
May	2074	1274	3272	5174	3546	198136	5809
June	532	278	797	2070	549	68906	18030
July	576	122	694	960	298	222979	7816
August	652	130	1108	894	347	243220	305
September	1316	232	3988	1879	1180	333824	500
October	2860	977	11092	9158	6987	172805	2098
November	2961	1319	6519	11583	8448	361544	2671
December							
Grand Total	15887	5912	45013	46641	31718	2114744	45948

Civil Aviation Authority of Nepal
Tenzing Hillary Civil Aviation Office, Lukla
Income Statement of Last three Fiscal Years

S.No	Particulars	FY 2066/67	FY 2067/68	FY 2068/69
1.	Landing charge	1621104.00	1677417.50	1704311.25
2.	Aviation communication charge	243165.60	251612.63	255646.66 s
3.	Security charge	162110.40	167741.75	170431.16
4.	Cargo charge	19301.10	22819.80	21180.30
5.	Parking charge	65868.75	72487.50	1725.00
6.	Night stop charge	302550.0 0	504000.00	616800.00
7.	Overfly charge	110624.00	120752.00	142340.00
8.	Terminal rent	465507.00	531600.00	512825.00
9.	Airport pass charge	29000.00	13000.00	------
10.	Passenger service charge	7878439.82	7417319.80	8690619.47
11.	Extended operation h our cost recovery charge	---	447147.00	1278271.47
12.	Electricity service charge	13409.25	13494.75	19308.75
13.	Late fee	-------	------	688489.24
14.	Interest income	86341.30	851837.85	1490628.27
15.	Miscellaneous income	1071.46	1858.42	-----
	Grand Total	10998492.68	12093089.00	15592576.57

Flight Inspection for TIA Radar

Birendra Joshi
Manager, TIACAO

The TIA Radar is a terminal radar (ASR/SSR) installed in 1997 under the grant aid project of JICA. It was handed over to then Department of Civil Aviation (HMG) in 1998 for full operation for ATC service after the completion of its Commissioning Flight Inspection in Feb. 1997 by FAA.

Purpose & Importance of Flight Inspection

The purpose of flight inspection is to find out the strength and quality of signal in the air space propagated from the ground equipments for the purpose of air navigation. It is required as there are errors surveyed on the ground for the status of electrical waves in airspace from radio facilities are subject to those surveys in the air because of atmospheric conditions and ground environment. For instance, as far as the airport facilities (eg.ILS, VOR, DME, TACAN, RADAR, GNSS,etc) are concerned, errors unexpectedly exceeds over the specific limit often occurs at certain points or, in certain azimuth, due to high rise buildings near the airport, or high tension line or, broadcast station or, telephone tower near the airport facilities. So, in addition to maintenance and calibration on the ground, it is needed to do flight inspection in a regular basis.

Standards for Flight Inspection

It is the known fact that the regular and safe operation of air traffic depends on the availability of reliable radio Navigation, Communication, Surveillance and other airport facilities. In order to ensure these facilities be operating in the international standard, these should be tested on a regular basis. This is recognized in ICAO Annex 10, Vol I, Part I which states as a standard. i.e.; ICAO Annex 10, Standard for Testing of Radio Navigation Aids (Vol. I) and Surveillance Radar System (Vol. III). The Volume III of ICAO Doc 8071 deals with the testing of surveillance radar systems (both primary and secondary radars). This document

provides an international standard on the ground and flight testing of radio navigation aids and also a standard guidance on methods for assessing the technical and operational performance of navigation aids and radar systems.

Why do we need to carry out Flight Inspection of our airport facilities? Flight Inspection is an essential part of air navigation safety. An accurate and reliable guidance signals radiated from navigational aids and surveillance systems contribute to air traffic safety. Only flight inspection guarantees that air navigation facilities worldwide are calibrated and if necessary, adjusted to internationally accepted standards.

Regulations for TIA Radar Flight Inspection

The regulation and the standard procedure for flight inspection of TIA Radar is as stated in the Flight Inspection Manual 2003, which was prepared on the base of ICAO/FAA standards and Radar Commissioning Flight Inspection Manual 1997. This document is intended to provide general guideline on testing and inspection carried out to ensure whether the radar system meets the SARP stipulated in ICAO Doc 8071.

Types & Priority of Flight Inspections

Commissioning : It is an extensive flight inspection to establish the validity of the procedure and augmentation signals. It is done for the newly installed equipment or airport facility before bringing it into actual operation. Refer table-1.

Periodic : It is a Flight inspection to confirm the validity of the procedure and augmentation signals on a regular basis. It is done in order to confirm whether signals in the space are deteriorated or not in course of time. Refer table-1.

Special : It is a Flight inspection required to investigate suspected malfunction, aircraft accidents, etc. It is only necessary to test those parameters which have or

might have an effect on performance during special flight inspection. It may be economically advantageous in many cases to complete the requirements for a periodic or annual inspection.

Priority 1 Accident investigation, restoration of established facilities after unscheduled outages, and investigation of reported malfunctions.

Priority 2 Periodic inspections, commissioning of newly installed facilities, associated instrument flight procedures, and evaluations of proposed sites for new installations.

Operational status of radar facility

Facility and/or procedure status can be identified as follows:

Usable; Available for operational use.
- Primary radar target strength "2" to "3" is regarded as usable .
- Secondary radar target strength "1" is regarded as usable.
-. Unrestricted : providing safe and suitable conditions conforming to established standard within the required airspace.
-. Restricted : providing guidance not confirming to established standard in all sectors of the coverage area, but safe for use within the restrictions defined.
    Unusable: Not available for operational use, or providing unsafe or erroneous guidance, or providing signals of an unknown quality.
    - Primary radar target strength "0" - "1" is unusable or, regarded as 'radar hole'.
    - Secondary radar target strength "0" is unusable.

Flight Inspection Items for TIA Radar
As per Flight Inspection manual 2003 the following flight inspection items are included as for the regular flight inspection :

1. Coverage check

1.1 Airways/route check : W-41; B-345; R-344; G-348; G-336; G335/R-325

1.2 Vertical check : Altitude level 075; level 095; level 145.
Reference radial 110^0-120^0 from the radar antenna.

2. Fixed map accuracy check : the following radar fixes are verified during flight check - KTM, LDK, LTH, LNC, IGRIS, SMR, ROMEO, AHALE, KIMTI, RATAN, MANKA,*GURAS *NARAN,*GAJUR,*BIDUR, *NAYAK, *PARSA, *OMUPA,*BIRGA,*GAURA,*LIKHU
Note: The RDR fixes under asterisks were recently added (in 2011) or, given new names.
-The following three Orientation/Perma fixes are compulsorily verified on the radar map: (i) North West (NW) , (ii) South West (SW) , (iii) South (S)

3. SSR mode /code check: Codes 0707; 7070 Squak A/C ID.

4. Instrument flight rule check: eg. DHARKE 1A; DHARKE 1D; IGRIS 1B

5. Standby channel equipment check: selecting st.by system channel.

6. Communication check: eg. VHF coverage of APP freq. 120Mhz & 125Mhz

7. Standby power check: using generator power supply.

The flight inspection items mainly airways/routes, fixes and vertical check reference radial are shown on the non scale Kathmandu TMA map below:
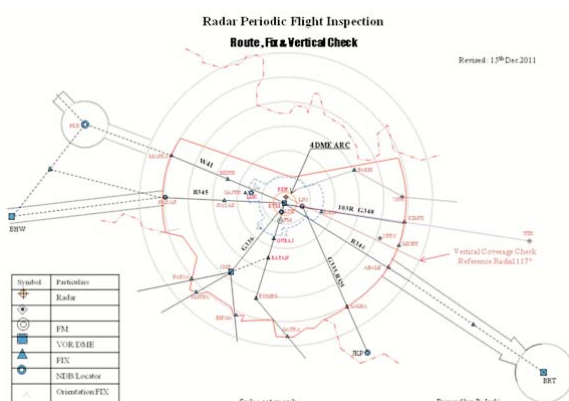
Analysis of recorded data

The strength of radar blip is recorded scan to scan to determine the radar coverage. The max range coverage is defined at the range of 80% probability of target detection.

The detection probability is conducted from blip scan ratio (BSR) and it is calculated by number of usable target return and number of scan ratio. Target blip over the fix measured on the radar scope is not to exceed 3% or, 500ft (whichever is bigger) of the total distance from radar antenna.

Table-1 Radar Flight Inspections done in the different year intervals

FI Year	Feb.1997	Mar.1998	Apr.1999	Mar.2001	May,2002	May,2003	Aug.2004	Nov.2006	Nov.2009	Dec2011
FI Type Team /	Commiss-ioning	Periodic	Periodic	Periodic	Periodic	Periodic	Periodic	Periodic	Periodic	Periodic
Agency	FAA	Local team	Australian Flight Inspect. team	Local team	Airways Newzealand	Local team	Vincent Aviation/ Airway FI	Pakistani Flight Insp. team	COBHAM, UK	AEROTHAI
A/C Type	HS-125 N-96	TWINOTTER/ DHC6	AUSCAL-2	Beach 1900C	Rockwell Comander 690A	Dornier DO228-100	CESSNA/ REIMS	Super King Beach-20	Beachcraft 350/King Air	Beachcraft/ Super King Air B-200

Table- 2 Analytical Report of Radar Periodic Flight Inspection as available since 2001

LEVEL/ TEMP	ASR/SSR 27Mar'01	ASR/SSR 14May'02	ASR/SSR 29May'03	ASR/SSR 24Aug'04	ASR/SSR 5 Nov'06	ASR/SSR 1 Nov'09	ASR/SSR 17Dec'11
14500'	52NM ($+3^0$C) 58NM	54.5NM (-2^0C) 60NM	51NM ($+11^0$C) 53NM	56NM ($+10^0$C) 56.5NM	54.5NM ($+3^0$C) 57NM	51.5NM (0^0C) 52.5NM	32NM (2^0C) 57NM
9500'	29NM ($+13^0$C) 33NM	30.5nm ($+11^0$C) 32NM	30NM ($+22^0$C) 31NM	38.5NM ($+19^0$C) 41.5NM	33.5NM ($+10^0$C) 35.5NM	28.5NM ($+7^0$C) 29 NM	27NM ($+6^0$C) 29 NM
7500'	19NM ($+18^0$C) 19.5NM	18.5NM ($+14^0$C) 18.5NM	20NM ($+25^0$C) 20NM	24NM ($+20^0$C) 24.5NM	19.5NM ($+16^0$C) 20.5NM	18.5NM ($+11^0$C) 20.5NM	16NM ($+9^0$C) 18.5NMA

Conclusion

TIA Radar has so far contributed with optimum level of its capability for the air traffic handling service. A controller at his control position may not be comfortable now without radar facility in such a growing traffic situation and congested air space of Kathmandu TMA. We have still no option than to maintain existing radar system at TIA though it has already completed its 15th anniversary of its service. Moreover, it is a souvenir of Japanese government in the name of its people. Hence, it will be one of our prime responsibilities to care for it and carry out regular flight inspection in order to ensure its system operability. Maintenance personnel at TIA have been doing their level best to maintain smooth operation of Radar system. —End

References
• ICAO DOC 8071
• FAA manual
• Radar Flight Inspection Manual 2003

Maintaining discipline in the working place

An organization having with good discipline runs better than those of lacking in it. It is the factor of success for every organization to operate with vision, mission and goal. The question arises: ' what is discipline and how to define it in an organizational culture; is it a self-introduced law or instead a law governed by the concern organization's rules and regulations?' In general, literally we are more or less familiar with the terminology 'discipline'; however, this article is focused on the introduction of discipline, its types and mode of dealing with disciplinary problems in an organization to make our work-place better as well as to ensure our machinery functioning well -- so that we could achieve a great attainment.

Discipline, in its literary term, is defined as a condition in the organization when employees conduct themselves in accordance with the organization's rule and standards of acceptable behavior. For most part, employees maintain discipline themselves which means that members confirm with what is considered proper behavior, because they believe it is the right thing to do. It is related with the principle 'do right things and never indulge in things that harm others at personal, professional and organizational level'. Once they are made aware of what is expected of them, and assuming they find these standards and rules to be reasonable, they seek to meet those expectations.

Like in other organizations, the staffs of Civil Aviation Authority of Nepal are also bound with a set of organization's rule and standards of acceptable behavior and it is more critical for us since we are linked with ensuring the air safety, the most sensible business in the world to bring world citizen in the Shangri-La Land to contribute in the national economy. In this industry, problem with discipline is unacceptable at any cost. If such problems exist, organization will not be able to run smoothly causing problem to our honorable guests from all around the world due to weak management practices in air transport and management sector.

It is a truth that discipline problem arises in every organization if rules and regulations are not implemented effectively. There are always a handful of employees who, regardless of what the organization has done for them in terms of its efforts at selection, socialization, job design, performance standards, and reward practice, always create problem for management. These problems include being chronically late for work, irregular attendance, conflict with co-workers, and refusal to follow their boss's guidance, breaking safety rules or engaging in other similar digressions.

Some of such problems observed in work-environment are listed below:

1. Attendance Problems

This is a common problem in an organization where rules and regulations are not implemented strongly and management has no courage to reward and punish employees with appropriate action. Specially, attendance problem arises when employees are not motivated with the job assigned to them and there is less satisfaction towards their job and performance. Organizations cultivated with the characteristics such as favoritism and nepotism generally suffer with the attendance problem from their employees due to lack of optimistic feelings for their management. Generally, staffs losing faith towards their management are the basic cause of attendance problem.

2. Infraction of Organization Rules

Respect towards rules and regulation is the sign of developed society. Contrary to it, undeveloped and under developed societies take pride in breaching the established rule. Mostly, those who are close to power or those who sense they are powerful infract the organization rule as seen in our country. Those who are associated with political groups infract organization rule with the sense that they are above the organization rule. Sometimes, people of this category forget that they are the part of the whole system

Manju Paudyal
Manager, CAAN Head Office

and they start to spoil work environment. The failure of many organizations in Nepal, mostly Government owned, is due to the staff's behavior of infracting organization rule. We, the employees of CAAN, must keep our organization in top among other business since the organization is our pride and our identity is linked with the organization, both at national and international arena.

3. Dishonesty

Like a dishonest person is the burden of society so is the case with an employee lacking discipline in an organization. Dishonest staff does nothing but harm the organization with his/her deeds. Dishonesty is completely unacceptable for an organization. If dishonest is noticed in the conducts of any employees, voices need to be raised against such people to take legal action and impose social isolation. Dishonesty is the mother of malfunctioning and bribery for any organization. So, in order to protect its goodwill, an organization needs to adopt measures against dishonesty prior to its growth within the organization.

4. Outside Activities

People go for outside jobs when they feel less paid for their work or the payment is not sufficient for their livelihood. So organization when fixing remuneration for their employees must always review the current market price of commodities and should always take into account the market inflation when deciding salaries for their employees so that they can meet their needs with what they earn. It will somehow reduce the instances of people's

indulgence in extra-official activities during office hour. Some employees, even after paid with good remuneration, like to engage in outside activities without caring about their responsibility. In such case, there is no other way than to take strong disciplinary action within the organization's set rules and regulations.

5. Self-trust

Some people like to go far away from given responsibility due to their self-trust, mostly caused by low level of competency to deliver the task. This disciplinary problem can be solved with the offer to improve their competencies and skills in their areas of work. People have their own strength and weakness. Staffs having administrative and management skills may not be fit for job that requires more technical skills and vice versa. If the employees go in the area where they have no skill for the job, they lose their self-trust. If they remain in such environment for a long time with unwillingness, they will lose their interest in work and will create problem related to discipline. Right man in right place is the key theme to maintain discipline in the organization. Self-trust will make people confident and they will be motivated to work for the organization.

6. Self-motivation

"A Dog inspired to bark never kills a Deer", this is the proverb which we have been listening since childhood; it is to say that a non- motivated staff never performs any work for achieving vision, mission and goal of the organization. Self-motivation is the condition when things come from inside out without any influence from external source. However, this condition cannot be achieved without good administrative environment where every staff feels he is secured and rewarded for his good work. Some management actions like group training on management, staff interaction, and performance based reward system and breaking communication barrier among different layers of staff make staffs self-motivated. It will reduce the lack of discipline problem caused by no motivation among the staff members. It is the positive thought among the staff that reduces the discipline problem generated due to low level of self-motivation towards the work. When staffs feel that they are equally taken care by the organization for their good work, they

get motivated with better performance in their work. For many organizations, lack of discipline in their staff is a grave problem; it is only because they just fail to analyze the root cause of the problem. To deal with the problem, they just impose the rules and regulations without understanding the crux of the problem— that is , in my view, the staff's internal feelings. Concluding the paper, I would like to say that you should, personally, deal with the person-staff psychologically: understand their internal problem and mitigate it with right tools—that is to say, participate yourself with them in their problems, fight for their rights together by motivating them to come forth with the spirit of the institute. Be honest and try to make them honest as well. Always be optimistic and open for new learning to enhance skills in order to increase self-trust and self-motivation. It will create an environment of discipline in working place. If you are right, things will move in right direction, automatically.

Let's start discipline from ourselves today; people will follow us tomorrow.

Twin otter landing in Lukla Airport.

Safety and Suspicion

Safety is the top most priority for each stakeholder in civil aviation industry. Civil Aviation Authority (the regulator), airport operators, aircraft operators, air navigation service provides, aircraft manufacturers, aircraft maintenance organizations, procedure designers and other relevant agencies keep on their efforts for enhancing safety. International Civil Aviation Organization (ICAO) is trying the best to ensure acceptable level of safety in air transport throughout the world and continuously empowering states to find out and overcome the deficiencies that may cause safety risk and hazard. International Air Transport Association (IATA) is also making its effort to improve safety in the air by empowering the airliner and carrying out regular operational audit of airlines. Likewise, Airports Council International (ACI), the international association of airports throughout the world is also highlighting the associated risks and joining hands with airports to enhance safe operation of air transport.

In the Nepalese context, Civil Aviation Authority of Nepal (CAAN), the regulator of civil aviation and operator of airports in the country, is continuously working with the close cooperation and guidance of ICAO and other agencies for ensuring a safe sky in the country. CAAN with the cooperation of the Ministry of Tourism and Civil Aviation is making efforts to amend the Civil Aviation Acts, Rules and Regulations to delegate authority to responsible personnel as recommended by the ICAO USOAP Audit. The efforts are not limited to the amendment of rules regulations but a clear demarcation is made in the regulator and operator functions of CAAN by restructuring the organization and setting up various departments to oversight safety in air navigation services, flight operations and airport operations. And dialogue is going on for separating the two functions by setting up a new service providing organization. Moreover, to facilitate continuous safety oversight CAAN has prepared Sate Safety Programme (SSP) in accordance of which service providers including Tribhuvan Intl. Airport have prepared and implemented Safety Management System (SMS).

As a step forward CAAN has implemented Voluntary Reporting System (VRS) of incidents. Generally, accidents and major incidents are reported by Air Traffic Services units and due investigation is also carried out. Investigation of major incidents are carried out by CAAN whereas, accidents are investigated by an independent investigation committee nominated by the Government of Nepal on ad hoc basis. The accident investigation reports are submitted to the government and published to take lesson and implement the safety recommendation made. But the occurrences of minor incidents are properly logged by the pilots, engineers and reported to the ATS unit and Flight Safety Standard Department. Besides, regular repair maintenance is carried out by licensed engineers and maintenance personnel on periodical basis to maintain the aircraft airworthy to fly. The Nepalese Airworthiness Requirements clearly instruct aircraft operators for reporting incidents and repair maintenance, even prior permission is needed to carry out major replacements of parts. And pilots are the ultimate personnel for the safe conduct of flights and the pilot in command has the right to deny flying an aircraft not fit to fly.

Hence, there is a good provision for reporting incidents or any malfunction in aircraft to rectify the problem, avoid aircraft accidents and ensure safety which is the motto of each stakeholder. But incidents and accidents keep occurring raising question over the safety of sky. Not only the regulator and operators are blamed but the whole nation faces challenge of getting black listed, as by European Safety Agency (EASA) few months ago. The past track of aircraft accidents in the country and mainly those occurred nearby TIA resulting in loss of all persons on board in which majority were foreigners and tourists. Though EASA got in pressure due to the involvement of Germany made Dorrnier aircrafts and persons from EU member countries, certain questions arises at this moment that are not exception. The flowing major questions must be answered /solved:

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➢ How those accidents occurred?
➢ Who is to blame- person or system?
➢ Why minor incidents not reported?
➢ Do pilots not love their family?
➢ Are we ill fated /cursed?

The first question is answered by the investigation carried out for each accident and the causes are analyzed in many ways. Since investigations are carried out to find the cause of accident/incident to avoid similar accidents in the future and not to blame one, the second question is not rational. But it becomes essentially when the causes are similar and incidents keep happening. The third question poses challenge on implementation of VRS and, hence, requires urgent attention to encourage reporting. The fourth question is totally different on personal basis and depends on one's psychology, social attitude and relatedness. And the last question tries to make a sense of luck and destiny of persons as well as the nation. Though our field is totally related to science and there is no place for mythical logic, the sacrificing of animals in the name of God and Goddess supposes this question.

On making close analysis of the above questions we can find only one answer for all questions that is 'Suspicion'. Suspicion simply means doubt or mistrust, and results in spoiling many things. We do not need to elaborate results of suspicion in one's daily life, but it is worth noting in maintaining law and order in a society, empowering people, and in our case managing safety. A person not believing others will face much difficulty though there may be some exception or it may take long time. In an organization there must be a culture of believing one

another i.e. just culture. If the boss is suspicious enough his subordinates will always try to hide incidents to escape from the unnecessary harassment. This is not only the case of a particular organization but it equally applies everywhere in the world. In Nepal the act of not believing others persuades people to hide information for example employees hide official matters, businessmen hide their income, youths hide their relations with others and in our case aircraft operators hide deficiencies in aircrafts. Thus, the impact of suspicions results in severe risk that is immeasurable and often unrecoverable.

Besides, suspicion harms an organization or a system in many ways we have adopted it as a significant part of our thinking. There may be some benefit of misbelieving others but it is quite low compared to the losses. It seems that administrators and regulators in Nepal have got special training for becoming suspicious and see everything in negative ways. Negative attitude may be for seeking personal benefits but it paralyzes the system. The culture of not reporting incidents as well as the act of torturing the voluntary reporters are blunders. It arises like a proverb that if operations remain normal no matter how severe is the problem but if something goes wrong

then hassles start. In daily life, a person engaged in voluntary rescue of the victims of road accidents and taking them to hospital are often tortured by police. So, gentlemen do not care for those needing urgent help and make their way unwilling to take unnecessary headache. Likewise, in our case wise pilots, engineers, operators do not want to face unnecessary burden and those innocently reporting cases are tortured by the regulator as well as by their employers. In such a situation how can we hope for the promotion of VRS and voluntary reporting of incidents?

Promotion and enhancement of safety is the demand of the hour so we should not leave any stone unturned to make our sky safe. We must start thinking positively and appreciate inquiries and trust those persons who are responsible for the safe operation of aircraft. There is quite low chance that a responsible engineer will allow an unfit aircraft to fly. Likewise, a responsible pilot will never fly an unfit aircraft and keep his own life and many other lives on risk. Similarly, an air traffic controller will not make two aircrafts collide or create hazard. A person, even though much idiot with his behavior, becomes serious once assigned

some responsibilities. So, promoting just culture by respecting one's duties and enabling one to perform his duties properly is the need of the hour to realize the truth: 'prevention is better than cure'.

Prevention of incidents and accidents of aircraft can only be ensured by knowing what sort of malfunctions frequently occur, and that can be evidenced by proper reporting of each and every incidents and snags. Special measures can be applied to rectify particular types of problems. And reporting on the other hand can be encouraged by taking it easy, believing the reporter and ensuring that legal action will not be taken against him. There is an instance of occurrence of accident by not declaring emergency and losing power with the lapses of time when the aircraft was suffering power failure. The hesitation behind not reporting cases is only the fear of penalty in terms of license suspension. In such a situation we must be honest in ensuring just culture and non punitive environment by eliminating the doubtful nature and suspicion. Therefore, the operators must feel free to report each and every type of incident, and the regulator must encourage reporting and trusting the reporter for a safe sky.

13th Anniversary Ceremony of CAAN.

RNP AR Approach Development and Constraints

Devendra Prasad Shrestha
Manager, TIACAO

Mountainous terrain severely restricted landings and take offs during periods of low visibility in Juneau, Alaska. Landings and takeoffs were limited to one direction in instrument meteorological conditions, and aircraft were unable to navigate through the Gastineau Channel on the north side of the airport. During 1995 Air Alaska's B737 fleet was equipped with Smiths FMS (now renamed as General Electric GE) fully RNP capable with very accurate performance values. Three Pilots of the airline had the idea to create instrument flight procedures that were tailored to the aircraft type and the onboard equipment they used. As a result they created procedures based on RNP0.1 with GNSS/IRU which allowed making approach and departing through the Gastineau Channel.

In Washington, there was an LDA/DME procedure published. LDA stands for Localizer Directional Aid and is an FAA designation for localizers that do not fulfill the alignment criteria and can therefore be placed anywhere. The procedure had the following disadvantages :
a) A minimum (MDH) of 706ft
b) A final approach track offset by 40°
c) A visual turn of 40° to line-up with the runway.

Alaska airlines then developed an RNP overlay to that procedure, which allowed them to go a bit lower already. The minima (MDH) were as follows:
a) RNP 0.3   565ft
b) RNP 0.2   364 ft
c) RNP 0.11 250ft

The approach allowed furthermore to reduce the amount of track change in the visual turn as it introduced 2 new waypoints and the final approach track was limited to offset of 2° only.

Later on Alaska airlines implemented RF (radius to fix) legs on the final approach to follow the Potomac River. The approach was then allowed to go to 250ft MDH with final leg perfectly aligned with the runway. This approach was later adopted by the FAA to become the first public RNP approach with Special Aircraft and Aircrew Authorization Required (SAAAR).

In June 2003 the FAA released a set of criteria as part of TERPS known as United States Standard for Required Navigation Performance Approach Procedures with Special Aircraft and Aircrew Authorization Required (RNP SAAAR) procedures which were more general than what Alaska Airlines had for their B737 fleet.

In Kyoto, Japan, in September 2005, the criteria was proposed for adoption into ICAO documentation by the meeting of the ICAO Obstacle clearance panel (OCP, now named as Instrument Flight Procedures Panel IFPP) and the agreement lead to ICAO OCP RNP Kyoto accord which was later renamed as Required Navigation Performance Authorization Required Procedure and the formal document named RNP AR procedure design manual first edition was published on 2009.

RNP AR APCH enables a higher level of navigation performance better able to address issues of airport access, such as obstacle-rich environment, and facilitate advances in air traffic management (ATM), requires the operator to meet additional aircraft and aircrew requirements and obtain operational authorization from the State regulatory authority.

RNP AR procedures can provide significant operational and safety advantages over other area navigation (RNAV) procedures by incorporating additional navigational accuracy, integrity and functional capabilities to permit operations using reduced obstacle clearance tolerances that enable approach and departure procedures to be implemented in circumstances where other types of approach and departure procedures are not operationally possible or satisfactory.

VOR/DME approach RWY02 for Kathmandu airport has steep descent gradient with rate of descent 9.5% including various step down descent fixes which is considered as difficult approach by the aircraft with maximum load penalty and risk. To overcome this problem Airbus initiated a study for an RNP0.3 AR approach in Kathmandu designed by CGX AEROinSYS and ENAC on expenses of their own companies during 2007. The benefit of this approach compared to the existing published VORDME approach is to replace the step down and steep vertical flight path by a constant 3° flight path angle. The study and design of this approach was not materialized until the initiation from Qatar Airways and Quo Vadis (subsidiary of Airbus Company) in joint effort for designing/charting/coding/training of RNP AR Approach RWY 02 for Kathmandu. The final design of the RNP AR APCH RWY02 was published and the demo flight was carried out on 19th March 2012 by the Qatar Airways flight. This approach was partially overlaid with the existing conventional approach but has the constant 2.8° flight path angle at stabilized speed of 170kt with RF legs on final and straight segment of 3.1miles from threshold RWY02. The DA for CATD aircraft was reduced down to 4670ft with visibility minima of 1100m with approach lighting system and 1900m without Approach lighting system. Afterthe detail report of the demo flight and simulator trainings the procedure was made open for commercial flights to the aircraft having special authorization effective from 28th june 2012. The first passenger flight of Qatar airways carried out RNP AR Approach RWY02 on 1st October 2012.
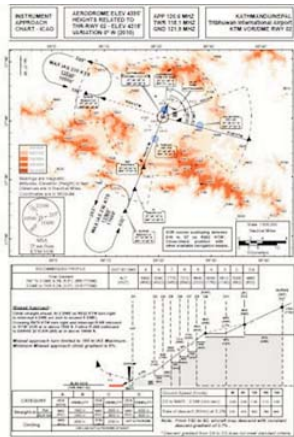
VOR DME APPRAOCH RWY 02
(existing procedure)
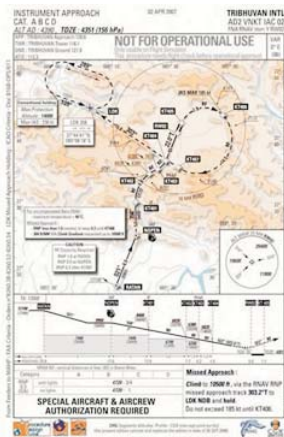
RNAV APPROACH RWY 02
(designed by ENAC study group)

RNAV (RNP) APCH RWY 02
(existing procedure)

Constraints of RNP AR APCH

Aircraft Qualification

For an RNP AR instrument flight procedure, only aircraft that have demonstrated performance, capability and functionality can be authorized to conduct RNP AR APCH operations. Aircraft must meet the requirements of the RNP AR APCH navigation specification given in the Performance Based Navigation manual. Aircraft manufactures must demonstrate and document aircraft performance and capability, and any special procedures or limitations associated with the aircraft and systems as part of either an aircraft certification programme or aircraft compliance assessment.

Operational Qualification

The authorization process includes the approval of operating procedures and crew training in accordance with the RNP AR APCH navigation specification. An operator must demonstrate to the state regulator that all appropriate elements of the RNP AR APCH operations have been appropriately addressed including:
a) determination of aircraft qualification;
b) training e.g. flight crews, dispatcher;
c) Minimum equipment list, continuing airworthiness;
d) requirements for operational procedures;
e) dispatch procedures;
f) maintenance procedures;
g) conditions or limitations for approval;
h) procedure operation validation for each aircraft type; and
i) conduct of a FOSA (flight operational safety assessment)

Flight Operations Information

The procedure requires that the aircraft operator examine its crew information, flight procedures and training to ensure that they are sufficient to enable operator qualification and operational approval. Crew information, flight procedures and training must be suitable for the RNP AR APCH instrument approach procedures, aircraft type(s) or variants, crew positions, airborne systems, navaids and ground systems to be used.

Flight Procedures

For RNP AR APCH procedures following aspects should also be taken into account
a) RNP capability: Crews must be aware of the aircraft RNP capability documented in the RNP AR authorization appropriate to the aircraft configuration or operational procedures.

b) RNP availability check: Prior to the commencement of an approach, the crew is responsible for ensuring that the appropriate RNP is selected. Crews will ensure prior to commencement of a procedure that the required navigation system performance is available and can be expected to be available through the conduct of the procedure. RNP should not be changed after commencement of the procedure.

c) Radius to fix (RF) legs: The use of RF legs provides more flexibility in the design of the procedure track which may be present in all phases of the procedures including the final segment.

d) Minimum equipment: Except as detailed in PBN Manual at some locations, the airspace or obstacle environment will require RNP capability during a missed approach from anywhere on the procedure where redundant equipment may be required.

e) Non-standard speeds or climb gradients: RNP AR approaches are developed based on standard approach speeds and specified a nominal climb gradient in the missed approach. Any exceptions to these standards must be indicated on the approach procedure, and the operator must ensure they can comply with nay published restrictions before conducting the operation.

f) Non-normal operations: Crews must be competent to contain the aircraft position within tracking tolerances consistent with the selected RNP during all normal and non-normal operations.

g) Vertical flight path tolerances: In the Final approach segment, crews will monitor any vertical deviation from the VNAV path to ensure that the aircraft remains within the specified tolerances.

h) Coupled autopilot: Use of coupled autopilot is recommended. Operator procedures must specify the conditions for operations without autopilot.

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Role of Engineer for Social Change

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1.1   Background

According to Oxford advanced learners English dictionary, an Engineer is a person whose job involves designing and building engines, machines, roads, bridges, etc or a person who is trained to repair and control engines. An engineer is a professional practitioner of , concerned with applying , and to develop solutions for technical, social and economic problems. Engineers are always involved in designing materials, structures and systems while considering the limitations imposed by practicality, safety and cost. An engineer can be Electrical, Mechanical, Civil, Materials, Electronic, Petroleum, Software, Chemical, etc. The work of engineers forms the link between scientific discoveries and their subsequent applications to fulfill human needs and maintain quality of life. A professional engineer is competent by virtue of his fundamental education and training to apply the scientific method and outlook to the analysis and solution of engineering problems. He/she is able to assume personal responsibility for the development and application of engineering, notably in research, designing, construction, manufacturing, managing and in the education of the engineer. The work is predominantly intellectual and requires the exercise of original thought and judgment. Engineers are capable of closely and continuously progressing in their branch of engineering through assimilation of various information and application. They are thus placed in a position to make contributions to the development of engineering and its social application.

1.2   Contribution of Engineer for Social Change

Engineers are responsible for social change and works for the protection of life and safeguarding people, sustainable management, care for the environment, community well being, professionalism, integrity and competence, sustaining engineering knowledge. All above mentioned activities are the critical driving elements or factors of social change. But the key factors of social change are Technological factors. Technology is a systematic knowledge which facilitates the use of machine, tools and practice.

Today's landscape is little different; society continuously changing and engineering must adapt to remain relevant. Technology has shifted the societal framework by lengthening our life spans, enabling people to communicate in ways unimaginable in the past, and creating wealth and economic growth by bringing the virtues of innovation and enhanced functionality to the economy in ever-shorter product development cycles. Even more remarkable opportunities are fast approaching through new developments in nanotechnology, logistics, biotechnology, and high-performance computing. Engineering activities have significant contribution for such technological change.

The question arises: can a dramatic and radical design of our technological system occur without causing major social changes, and will it occur without a rethinking of political priorities? Technology is not independent of society either in its shaping or its effects. In the data of human experience, our tools need to interact with every component of our existence: physically, environmentally, educationally, psychologically, socio-economically, politically and spiritually in order to be fully relevant to human needs. The change in technology means modification, alteration and innovation in material which is responsible for social change. Engineer has main contribution for any kind of technological change.

1.3 Activities of Engineer for Social Change

The following driving factors by which, engineer can specially contribute, are critical for any kind of social change.

1.3.1 Innovation / creation with continuous effort

Engineers develop new technological solutions. During the engineering design process, the responsibilities of the engineer may include defining problems, conducting and narrowing research, analyzing criteria, finding and analyzing solutions, and making decisions. Much of an engineer's time is spent on researching, locating, applying, and transferring information. Their crucial and unique task is to identify, understand, and interpret the constraints on a design in order to produce a successful result. Engineers are directly involved in their professional work continuously and they can innovate new things / idea/ procedure useful for the society and human being. Engineering is an invention and design processes New devices, material selection and viable processes are developed by engineers to meet the requirement that existing technology do not address. Engineers identify and apply the most suitable system to solve engineering related problems using appropriate decision making tools which were acquired through a number of circumstances. In general, engineering is the art of applying scientific and mathematical principles, experience, judgment, and common sense.

1.3.2 Analysis of engineering activities and social Issues

Engineers always analyze the risk and apply techniques of in testing, production, or maintenance. Analytical engineers may supervise production in factories and elsewhere, determine the causes of a process failure, and test output to maintain quality. They also estimate the time and cost required to complete projects. Supervisory engineers are responsible for major components or entire projects. Engineering analysis involves the application of scientific analytic principles and processes to reveal the properties and state of the system, device or mechanism under study. Engineering analysis proceeds by separating the engineering design into the mechanisms of operation or failure, analyzing or estimating each component of the operation or failure mechanism in isolation, and re-combining the components.

1.3.3 Ethics and Ethical Activities
Engineers have obligations to the public, their clients, employers and the profession. Many engineering societies have established codes of practice and codes of ethics to guide members and inform the public at large. Each engineering discipline and professional society maintains a code of ethics, which the members pledge to uphold. In the context of Nepal, engineers have professional organization i.e. Nepal Engineers' Association which develops the ethical principle and code of conduct for engineers. Depending on their specialization, engineers may also be governed by specific statute, whistle blowing, product liability laws, and often the principles of business ethics. So, Engineers can contribute to society to do ethical activities as a role model.

1.3.4 Specialization and management
Most engineers specialize in one or more. Numerous specialties are recognized by professional societies, and each of the major branches of engineering has numerous subdivisions. Civil engineering, for example, includes structural and transportation engineering, and materials engineering includes ceramic, metallurgical, and polymer engineering. Several recent studies have investigated how engineers spend their time; that is, the work tasks they perform and how their time is distributed among these. Research suggests that there are several key themes present in engineers' work: (1) technical work (i.e., the application of science to product development); (2) social work (i.e., interactive communication between people); (3) computer-based work; (4) information behaviors.

1.4   Areas of Social Change

The following areas where engineers can specially contribute are the critical areas of social change.
1.4.1 Development works
Engineers are directly involved in development activities and advancement of infrastructure, facilities and functions due to which public society are beneficiaries. Engineering technologists use their knowledge to help design and make bridges, buildings, computers, electrical appliances, power plants, transport infrastructures, etc that we utilize at present. Engineering is also dealing with the process of producing a technical product or system to meet specific need to benefit mankind.

1.4.2 Knowledge & Technology Transfer
Engineers are capable to transfer the technologies and medium to transfer the knowledge to the society. They are capable to adopt new technology and procedure which may be very useful to the society. Engineers spend most of time for some kind of research activities which may directly or indirectly involve technology and knowledge transfer. Many engineers adopt latest technology to produce and analyze designs, to simulate and test how a machine, structure, or system operates, to generate specifications for parts, to monitor the quality of products, and to control the efficiency of processes.
1.4.3. Economic Development
Economic development is the development of economic wealth of countries or regions for the well-being of their inhabitants. The economic development process supposes that the legal and institutional adjustments are made to give incentives for innovation and for investments so as to develop an efficient production and distribution for goods and services. Economic development is a sustainable increase in living standards that implies increased per capita income, better education and health as well as environmental protection.

The engineering profession makes important contributions to the economy at different levels. In the first place, there is the direct addition to economic output from the work they do, which can be measured by engineers' earnings, i.e., payroll plus profits earned. Then we can consider the contribution that engineers make to the output or Gross Value Added (GVA) of the various sectors in which they work, and the benefits these sectors have throughout the economy in terms of purchases from suppliers, spending by workers and so on. At a wider level, the engineering profession is a repository of knowledge, technology and experience of key economic importance, and is thus vital to ongoing economic development and growth. Two areas we consider specifically in this chapter are the contributions engineers make to the knowledge economy and to sustainability.
1.4.4 Sustainable Economic Development
The achievement of sustainable economic development requires a new and different approach to policy making and its implementation. The Government is

looking for greater integration and co-ordination of policy making and its implementation across the public sector and across social economic and environmental policy portfolios. It is also looking for an approach characterized by greater partnership between government, economic entities, private industry and other community groups. Engineers must lead this new industrial economic revolution. They are capable to make sustainable economic development high priority in engineering and business both in practice and in the education of future engineers. Designing a sustainable future requires a paradigm shift towards a systematic perspective which encompasses the complex interdependence of individual, social, cultural, spiritual, economic and political activities and the biosphere. The engineers of the future must be much more interdisciplinary – the lines between the traditional engineering disciples must be much more fluid. Engineers will have to join forces with biologist, chemist, meteorologist, economics, planners, political scientists, ethicists, religionists and community leaders in unprecedented ways to lead the society on a sustainable economic path.

1.4.5 Environmental Protection
There is a great reliance on technology to solve environmental problems around the world today with an almost universal reluctance by governments and those who advise them to make the social and political changes that would be necessary to reduce growth in production and consumption; yet the sorts of technological changes that would be necessary to keep up with and counteract the growing environmental damage caused by increases in production and consumption would have to be fairly dramatic.

Sustainable economic development is the challenge of meeting human needs for natural resources, induce trials products, energy, food transportation, shelter and effective waste management while conserving and protecting environment for future human and capital development when they are fully harnessed to create jobs and generate income for the government for the purpose of economic development and transformation of society .

To enable engineers fully be part of the economic development, there should be

broadening and strengthening the education of engineers and finding innovative ways to achieve needed economic development in all areas while conserving and preserving natural resources.

1.5 Ways of Social Change

For social change engineers utilize their knowledge and training as a strategic tool to solve "problems of any local communities" and in "bettering conditions of the underprivileged citizens) by following methods.

a. Creative problem solving. Engineers able to address the needs of communities by using an interprofessional approach that requires working with social workers, psychologists, and other professionals to address the root cause of the community's issues.

b. Grassroots organizing. Traditionally, Engineers have played an integral role in shaping public policy and effectuating systemic changes. Engineers of social change can use their legal skills to empower communities as they advocate for the protection of civil rights and equal access to justice. Engineers of social change use their legal skills to help people carry out their ideas and create a strategic plan of action to achieve their goals.

c. Leadership development. Engineers of social change create transformation through the utilization of their problem–solving skills, social judgment skills, and knowledge of the law. They lead the community in realizing the full potential of its power.

d. Bridge building. Engineers of social change are integral to building the community by acting as a liaison between community members, policy makers, and key stakeholders.

Conclusion

Engineers provide the bridge between science and society. In this role, engineers must actively promote and participate in multidisciplinary teams with other professionals, such as: ecologists, economists, medical doctors, and sociologists, to effectively address the issues and challenges of social economical and sustainable economic development because engineers working on a global scale will help promote public recognition of the engineers and understanding of the needs and opportunities in today's fast developing world in order to ensure the engineers' role in a social change and development. Engineers have a leading role in planning, designing, building and ensuring a sustainable future.

Sustainable economic development relies on technological change to achieve its aim but will governments take the tough steps that are required to force radical technological innovation rather than the technological fixes that have been evident to date? Such measures would require a long-term economic cost while industry will readjust.

Moreover, all engineers must play a much stronger role in the public policy process to provide the right incentives for society and can be encouraged and supported to design sustainable technology for the purpose of economic development that benefits society in a holistic way now and in future.

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An Overview of Airport Privatization Worldwide

On 1st November, 2012, a newscast appeared in The New York Times with the headlines "Chinese Sovereign Wealth Fund to Buy Stake in Heathrow Airport". According to the news Chinese Investment Corporation (CIC) will buy a 10 percent stake of which 5.7 percent holding will be bought from Spanish Infrastructure Company Ferrovial and 4.3 percent holding will be acquired from other shareholders. In last August, Qatar Holdings LLC the sovereign wealth fund of Qatar agreed to buy 20 percent stake in the British Airport Authority (BAA) (). Likewise, Alinda Capital Partners an independent private investment firm has also acquired a 5.9 percent holding in the BAA.

On 15thOctober 2012, BAA issued a media release with a heading "End of BAA" which states "We are a different company today from when BAA was formed. Over the last few years we have sold our stakes in Gatwick, Edinburgh, Budapest and Naples airports and we are in the process of selling Stansted Airport. The BAA name no longer fits. We do not represent all British airports; we are not a public authority; and practically speaking the company is no longer a group as Heathrow will account for more than 95% of the business." The media release further clarifies "BAA (SP) Limited has changed its name to Heathrow (SP) Limited"().

On 5th November 2012 Sydney Airport issues ASX Release on Foreign Ownership Level and states that its foreign ownership level has decreased to 37.1% from 37.5% previously announced. Sydney Airport is not a "Foreign Person" under the Airports Act 1996 for so long as foreign ownership of Sydney Airport is below 40%. On 31st October 2012, The Economic Times (India) published news stating "The world's second largest airport operator of Germany today said it will exit the by selling its entire 10 per cent interest and is in discussions with JV partner in this regard.

Such news and media releases provide the glimpses of changing faces of airport business in the world.Here in this article we are going to discuss how airport privatization is taking shape worldwide. We have taken countries from high income, upper middle income, lower middle income and low income economies. For country group classifications we have taken the reference from http:// data. worldbank.org /about/country-classifications/country-and-lending-groups

A. Cases of High Income Group Countries

The United Kingdom (UK)

In the process of UK's airport privatizationBAA was soldthrough Initial Public Offering (IPO) and registered in the London Stock Market, in 1987. This privatization was an intensely political act. It was a step of Conservative government led by Margaret Thatcher adopting a new policy of lean and smart government. Nevertheless the privatisation of BAA was an initial success. Later on, a consortium led by Spanish construction group Ferrovial took over BAA. As a result, the company was delisted from the London Stock Exchange in August 2006 (www.icao.int/sustainability/; ICAO Case Study: United Kingdom 2011). Until 1997, UK had privatized nine other airports. In 2009, Competition Commission ordered the sale of Gatwick, Stansted and one of either Edinburgh or Glasgow airports from BAA group. BAA sold Gatwick Airport in December 2009 and Edinburgh Airport in 2012 to Global Infrastructure Partners. Eventually, BAA itself lost its identityand emerged as Heathrow (SP) Limited in October 2012. The ownership structure of Heathrow (SP) Limited is Ferrovial: 44.27%; Britannia Airport Partners (CDPQ): 18.92%; GIC (the Government of Singapore): 15.63%; Alinda Capital Partners: 11.18%; Stable Investment Corporation: 10%. (www.baa.com/about-baa/who-we-are/who-owns-us). Air traffic management of the United Kingdom is entrusted to NATS Holdings Limited (NATS) under the Civil Aviation Authority of the UK. In 2001 NATS was converted into a Public Private Partnership (PPP) company with Airlines Group (AG) as preferred investors with 46% share

and staff with 5% share. In 2003 BAA took 4% share reducing AG's share to 42%. (www.nats.co.uk/news/toolkit)

UK Civil Aviation Authority has statutory power for the economic regulation of airports. British airports are subject to general competition law applied by the Office of Fair Trading (OFT) as well as the Competition Commission.

Australia

Australiafollowed Britain to privatize its airports aiming mainly at reducing the Government's net debt. Firstly Brisbane, Melbourne and Perth airports were privatized in 1997. In the second phase, Adelaide, Alice Springs, Canberra, Coolangatta, Darwin, Hobart, Launceston, Townsville and six other regional airports were privatized. In 2001, all the shares of Essendon Airport were sold to a private sector company. In 2002, Government sold a 100 per cent stake in Sydney Airport. Privatization of three other regional airports were completed 2003. Australia adopted 50 year lease modality with an option of additional 49 years. The stated rationale was to "improve the efficiency of airport investment and to facilitate innovative management". Government raised AU$ 8.3 billion from the sale of 22 airports. Australia has set 49% limit on foreign ownership of its airports (www.comlaw.gov.au)Individual airports are responsible to ensure that an unacceptable foreign-ownership situation does not exist. In compliance of this legal provision, Sydney Airport has set the level of foreign ownership level to be below 40%. As of October 2012, foreign ownership level was 37.3%

Air Navigation Service Provider (ANSP) activity is entrusted to Airservices Australia (AA). AA is a government owned

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corporation created in 1995 by splitting the Civil Aviation Authority of Australia.The Australian Competition and Consumer Commission (ACCC) have prime responsibility for economic oversight of airports.

The United States

In the United States most commercial service airports are owned and operated by local or state Government. In 1997 Federal Aviation Administration (FAA)established airport privatization pilot programdesigned to allow airports to generating access to sources to private capital. Up to 10 airports could participate. Only one large hub airport could be included in the program. One of the airports must be a general aviation airport. Commercial service airports can only be leased. General aviation airport can be sold or leased. In the process, Chicago Midway Airport (a large hub) Chicago, Hendy County Airglades Airport (general aviation) Florida and the Luis Munoz Marin International Airport (LMMIA), Puerto Rico is included in the program. In July 2012, Puerto Rico Public-Private Partnership Authority has selected the Aerostar Airport Holdings as the winner of a public bidding process which is waiting for FAA's final approval. Aerostar is expected to enter into a 40-year lease agreement for the airport(;) with the Puerto Rico Ports Authority. Pursuant to the terms of its bid, Aerostar Airport Holdings will make an upfront payment of approximately $615 million and annual payment $552 million to the Puerto Rico Ports Authority.

FAA provides the Air Traffic Services (ATS) through its Air Traffic Organization (ATO). With more than 7,000 takeoffs and landings per hour, and more than 660 million passengers and 37 billion cargo revenue ton miles of freight a year, ATO safely guides approximately 50,000 flights through the national airspace system every day (http:// www.faa.gov/ about/office_org/headquarters_offices /ato/).

Economic regulation of the USA airports is limited to charging policy which is set by FAA. Airport fees and charges to aeronautical users must be fair and reasonable. Policy prohibits on unjustly discriminatory rates and charges. FAA does not charge for the use of federal air navigation services except for over flight. ATO has been supported from the Government's general fund. (ICAO Case Study: United States 2011)

Thus airport privatization in the USA is moving at a very slow pace. Nevertheless it is said that U.S. airports are among the most privatized in the world and there is little scope for privatization in the United States compared to elsewhere (ardent.mit.edu/airports/ASP_current_l ectures/Privatizationissues02.pdf). The overall situation is that American commercial airports are run through a form of partnership between Federal Government, local civic interest and private companies.

Japan

Airports of Japan are currently operated by central or local government. There are five major international airports which are grouped into first category airports. Haneda Airport of Tokyo and Itami Airport of Oshaka are owned by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT). But MLIT operates the airside and land side and Terminals are managed by different private companies. Some of these companies are owned by airlines, banks and private corporations some others are owned jointly by local government and private corporations. From 2004 Narita Airport of Tokyo is managed by Narita International Airport Corporation a 100% government-owned public entity. Kansai Airport of Osaka and Centrair Airport of Chubu are owned by government and private investors. In Kansai Airport, central government 66%, local government 22% and privat holding 12% share whereas in Centerair Airport central government owns 40% local government 10% and the private investors 50%. 20 of the second category airports are managed by central government and all 59 of the third category airports are managed by municipalities (ICAO Case Study: Japan 2011).

Recently, Japan has announced a plan to privatize its airports in a bid to reduce landing fees and attract new airlines. As per the plan, special purpose companies will be setup to manage facilities. Privatization will start from 2014 and be completed in 2020 (Airport World 19 January 2012).

Civil Aviation Bureau of MLIT provides air navigation service in Japan. Air navigation service is not corporatized, privatized, or commercialized.The levels of landing charges for airports are subject to the approval of the MLIT. The Civil Aviation Bureau of the MLIT continues to regulate and set air navigation services charges. (www.mlit.go.jp/koku/english/)

Thus the airport privatization in Japan is currently focused to International Airport Terminals having some sort of a PPP modality in one or two cases. A clear plan on airport privatization is not yet implemented by the Japanese government.

B. Cases of Upper Middle Income Group Countries

Mexico

Mexico's Airport Law in 1995permitted foreign company's investment up to 49%. In 1998, 58 airports managed by the government corporation Aeropuertos y ServiciosAuxiliares(ASA)were grouped into four regions and incorporated a state owned concessionary company for each group. Some 35airports were to be offered to the private sector on BOT concession for 50 year. Each concession was formed around one airport with traffic exceeding 5 million passengers a year and with an important regional role. ASA kept responsibility of the country's less economically viable airports.

A two stage privatization strategy was then implemented for the four state owned airport concessions. First, the control of the concessionary entity as well as 15% of their shares was sold to a strategic partner selected through an international competition. The strategic partner must have to include a Mexican partner as well. (ICAO Case Study: Mexico 2011) Privatization took off with the group of airports around Cancun City. For this ASUR group was established in 1998 to manage 9 airports. Later on Mexico government sold its 85% share as well. ASUR became the first airport operator in the world to be traded in New York Stock Exchange (NYSE) and Mexico (www.asur.com.mx/asur/ingles/). GAP Group was established in 1999 around Guadalajara City Airport tooperate 12 airports. The government sold its 85% shares in 2006 and in the same year company was also listed in NYSE. (http://aeropuertosgap.com.mx/english/). OMA Group was established in 2000 around Monterrey City Airport to manage, 13 airports. OMA carried out IPO on the Mexican Stock Exchange and the NYSE and the government sold all its

85% shares in 2005 and 2006. This transaction completed the privatization process that the government began 9 years earlier(www.oma.aero/en/). Privatization process of Mexico City International Airport could not materialize. ASA still operates this airport. Thusprivatization of three concessions covered 34 airports of Mexico.

Air navigation service of Mexico is under an autonomous body of the government which also regulates and sets air navigation services charges. Transport Ministry is responsible for establishing rules regulating airport services.

South Africa

In 1993, South Africa established State-owned Enterprises (SOE) nemedAirport Company South Africa Limited (ACSA) to own nine major airports for 35 years. Also in 1998 one more airport was transferred to ACSA, however, ACSA returned this airport tothe province in October 2011 (www.acsa.co.za/home.asp?pid=53)

In 1996, government issued a policy white paper opening for foreign capital, technology and management skill to ACSA. Government intended to retain 51% share and planned for a two phase sale of minority stake to private entities. It aimed to acquire a Strategic Equity Partner (SEP) followed by the listing of its remaining shares on the Jonesburg Stock Exchange. Through a competitive bidding in 1998, Aerporti de Roma (ADR) an Italian airport management firm purchased a 20 percent share with an option to take up a further 10%. Later in the same year, a 4.22% stake was also sold to five empowerment consortia. But further IPO of ACSA has been postponed number of times. Due to the delay in IPO, later in 2005 ADR sold its 20% stake again to the government owned Public Investment Corporation (ICAO Case Study: South Africa 2008). By August 2012, South Africa has partly privatized its 11 airports nine of them with 4.21% private equity, one (Rand Airport) with 50% and the other (Kruger Mpumalanga International Airport) with 100% private equity (www.aci-africa.aero/.../PPP-for-Airport-Management-and-Development.pdf). Kruger Airport is constructed in an African theme; the terminal building is under thatch, which covers an area of 7350 square meters (www.mceglobal.net).

South Africa established the Air Traffic and Navigation Services Company Limited (ATNS) as a SOE in 1993 in order to corporatize the ANS service. ATNS has operated entirely from revenues generated from its customer base. Airport charges under ACSA are regulated by Regulating Committee (RC) a semi-independent statutory body appointed by the Minister of Transport. ANS service charges under ATNS are also regulated by the RC.

Malaysia

In 1991, Malaysian government incorporated Malaysia Airport Berhard (MAB) to take responsibility of airport operations. In 1992, MAB received a 30-year concession to manage and operate 33 airports with scheduled traffic. In 1998, five other airports were subsequently transferred to MAB. MAB was also licensed to manage and operate the new Kuala Lumpur International Airport for 50 years. In 1999, MAB was incorporated as a public limited company under the name of Malaysia Airports Holdings Berhad (MAHB), and was thereafter listed on the Kuala Lumpur Stock Exchange becoming the first airport operating company to be listed in Asia and sixth in the world (www.malaysiaairports.com.my/). The Government of Malaysia sold 48% of the shares in MAHB to institutional investors and the public in 2000, while retaining a ''Special Share'' in both MAHB and MA Sepang that gives it the right of decisive vote and requires the Government to approve extraordinary transactions or significant changes in the operation of the two companies. In 2004, the Government transferred its shares in MAHB to Khazanah the investment arm of the Government. Khazana currently holds 60% of MAHB. (www.icao.int/sustainability/ Case Stury Malaysia 2011) Two other Malasyan airports are under different companies. Senai International Airport is managed by Senai Airport Terminal Services SdnBhd (SATS), a subsidiary of a private utilities and infrastructure group. Kerteh Airport in Terengganu is owned and operated by Petronas, a wholly government-owned oil and gas company.

Malaysian air traffic management is under the Directorate of Civil Aviation (DCA). Airport charges and air navigation services charges are also regulated by the DCA.

People's Republic of China

The People's Republic of China has rapidly expanding civil aviation sector. In 2009, China had 166 civil airports open for air traffic which are expected to reach 260 by 2015(Error! Hyperlink reference not valid.). In 2011 china's 39 international airports passenger traffic exceeded 560 million. China launched a new wave of commercialization in 1993 by loosening the climate of airport investment. New mechanisms allowed the subsequent corporatization of airports and the commoditization of their services. Investments in the airport sector were facilitated, especially for airlines. Hainan Airlines was the first air carrier to receive approval for investing in Haikou Meilan International Airport (www.icao.int/sustainability/caseStudies/China.pdf). In November, 2002, the Hainan Meilan International Airport Co., Ltd. wasalso successfully listed on the Hong Kong Stock Exchange, showing its success in pilot reform(www.mlairport.com/). On 1 January 2000, 1,346,150,000 H shares in the Company of RMB1.00 each were issued to the public and such shares were listed on The Stock Exchange of Hong Kong Limited (the "Hong Kong Stock Exchange") on 1 February 2000 (http://en.bcia.com.cn/investor/). In 2003 management of all Chinese airports except Baizing Capital and those located in Tibet were transferred to either Provincial or City Government. In addition, the Government facilitated private investment in terms of shares and in terms of investment in facilities. Domestic and foreign capital can be invested in large and medium airports and can purchase and operate all airports. Until 2011, China had accepted private investment in at least 6 of its major International Airports including Beijing, Guanzhow, Shanghai and Shenzhen Bao'an Airport. Private investment ranged from 25 to 47.95 %. These six airports handled about 38% of international passengers in China.

The provision of air navigation services is neither privatized nor corporatized or commercialized. Air Traffic Management Bureau of the Civil Aviation Administration of China (CAAC) provides the air traffic and navigation services. CAAC also regulates airport charges through distinct price-cap for aeronautical charges and major non-aeronautical charges.

C. Cases of Lower Middle Income Countries

Bolivia

Bolivia is one of the poorest countries of South America. In 1996, Bolivia decided to grant a concession for the operation and the development of the country's three international airports. These airports together handled 85% of Bolivian domestic and international traffic. In March 1997, a concession was awarded to Airport Group International (AGI) for a 25-year period (http://en.wikipedia.org/wiki/Viru_Viru_International_Airport). The concession agreement states that AGI will pay 25% of its collected landing charges and 20.8% of its total revenues. The concession agreement does not specify the level of investments to be made by the concessionaire, but rather calls for the maintenance of the three airport terminals in the IATA Category B airport (which rates the amount of passengers to terminal space), with the objective to develop a progressive investment program adapted to traffic growth at these airports. (ICAO Case study: Bolivia 2011)

Other airports have remained under a government entity called AASANA (Administración de Aeropuertos y ServiciosAuxiliares a la NavegaciónAéreagovernment). ANS is provided by AASANA. Another government agency Bolivia Superintendence of Transportation is responsible to establish and review rates and charges for airports and air navigation services. Air navigation service is provided by AASANA.

Kosovo

Kosovo is a young state of Europe that got independence in 2008. Kosovo a lower income group country is one of the poorest countries of Europe. Pristina International Airport (PIA) is the only airport of Kosovo. In 2010, government decided to privatize PIA. A Turkish-French consortium Limak and Aeroports de Lyon was selected for the concession management. Limak group holds 90 percent of the consortium's shares while the remaining 10% is owned by Aeroports de Lyon. An agreement between the Kosovo Government-Public Private Partnership and the consortium was signed in August 2010.In 2011, the cconsortium officially took the responsibilities of PIA in 2011. Concession period is for 20 years. According to the concession deal, consortium will invest over 100 million Euros, and will modernize the services of PIA (http://airportpristina.com/en/about-us-3.html).

Civil Aviation Authority of Kosovo (CAAK) is responsible for the regulation of civil aviation safety and the economic regulation of airports and air navigation services in Kosovo (www.caa-ks.org/). Although the performance of Pristina International Airport was satisfactory and for any nation the operation of a single airport might not have a big burden, the reason of privatization may be to shift the financial burden of business viable sector in private hands and focus the government activities in more important avenues of nation building.

Egypt

Egypt has about 30 airports of which 11 have international operation. Egyptian government established Egyptian Holding Company for Airports and Air Navigation (EHCAAN) in 2001 as a state holding company in charge of public airports. EHCAAN owns four subsidiaries including Cairo Airport Company (CAC) and Egyptian Airports Company (EAC) and National Air Navigation Services Company (NANSC). EHCAAN operates 20 Airports. CAC owns Cairo Airport while EAC owns 19 other airports. In 2004, Cairo Airport was awarded to Fraport Ag as a management contract to run for eight years. Among 19 airports under CAC, two are privatized under long term BOT concession. One of them is MarsaAlam International Airport. In 2001, EMAK MarsaAlam a subsidiary of the M.A. Al-Kharafi Group of Kuwait got a 40-year BOT concession with the Egyptian Civil Aviation Authority. This airport came into operation in 2003 and is managed by Aéroports de Paris. And the other one Al Alamin International Airport was awarded a 50 years concession in 1999 under BOT basis to KATO group which came into operation in 2005. This airport has not been able to utilize its full capacity due to lack of flights. Airport (http://weekly.ahram.org.eg/2005/745/ec10.htm).

NANSC is responsible for preparing and operating Air Traffic Services, Navigational Aids and Safe guarding Air Navigation Services within the Egyptian Airspace and in all Egyptian airports (http://nansceg.net/index.html). The Ministry of Civil Aviation of Egypt (MCA,) is the ministry in charge of civil aviation in Egypt Thus the airport privatization modality of Egypt has been a long term lease basis. Although three of its airports were awarded to private investors the success has not been so much encouraging.

India

Airport privatization in India started with the Cochin International Airport (CIAL) which is the first Greenfield airport setup in the public private partnership (PPP) model in India. CIAL was formed in 1994with the equity participation from the Government of Kerala, Industrialists, NRIs, Financial Institutions, Airport Service Providers and the Public. CIAL commenced its international operation from 1999. Later in 1997, India's policy on airports opened door for private investment in airport infrastructure (http://www.aai.aero/public_notices/aaisite_test/policy.jsp). In 2003, Government passed a legislative amendment to the Airports Authority of India (AAI) Act, 1994 which allowed 100% foreign direct investment in Greenfield airports. In 2006, Delhi and Mumbai airport's management were transferred to newly created limited companies. A30 year concession was granted on PPP modality to operate, manage and develop these airports to GMR and GVK led consortia respectively (ICAO Case Study: India2012). Two other Greenfield airports Hyderabad and Bengaluru were also awarded to be developed under a 30 year concession basis to the above investors. Private sector a majority share (74%) and the government minority (26%). Dr. Babashahib Ambedkar International Airport, Nagpur is being put on Joint Venture airports which are being developed jointly with the Maharashtra State Government.

Air navigation service in India is provided by AAI along with regulation.The objective of airport privatization in India has been to meet the financial requirement and to seek world class management efficiency

along with service quality. After the privatization as is seen the development of sufficient facilities and infrastructure within a short period of time and the high ASQ ratings by ACI in Delhi, Hyderabad, Bengaluru and Mumbai airports, the objective seems to be fulfilled satisfactorily. Recently the Indian government has come up with a plan to privatize Chennai and Calcutta Airports. But there has been resistance to the privatization plan by the AAI employees on ground that Government has recently spent about 4450 crore Rupees in infrastructure and that AAI would lose a substantial part of revenue source from these airports (TOI, July 26, 2012). No other airports are privatized after 2006.

D. Cases of Low Income Group Countries
Cambodia
Very few cases could be traced from our web research on airport privatization in low income economies. We could find airport privatization cases of Cambodian airports only which we have included in the discussion here. Cambodia is one of the poorest countries of Asia. This country was under internal conflict and civil war since 1970s. Peace was established here only in 1993. Cambodia has 7 domestic and 3 international airports in commercial operation. In 1995, Cambodian Government signed a Build-Operate-Transfer (BOT) concession with private sector investors (the Société Concessionaire de l'Aéroport (SCA) French 70% / 30% Malaysian-Cambodian Consortium to operate Phnom Penh International Airport for 20 years. Later the concession period is extended up to 2040 and two other international airports are also handed over to SCA (www.civilaviation.gov.kh/). Domestic airports are the direct responsibility of the State Secretariat of Civil Aviation (SSCA)

The Air Traffic and Air Navigation Services of Cambodia are also privatized. Cambodia. Air Traffic Services Co., Ltd. (CATS) was awarded a 22 year in 2001 to develop and operate the entire civil air traffic control and navigation system ofCambodia while obliging them to meet certain Build, Cooperate, and Transfer (BCT) terms and condition. (www.cats.com.kh/about.asp).

Lesson for Nepal
On the basis of above discussion we can draw some useful idea regarding airport privatization. Basically, in civil aviation sector, regulatory function and operation function are involved. Within the operation function, there are two different sectors. One is ANSP including air traffic control function and the other is airport operation.

Among the 13 countries taken in this discussion, The UK and Cambodia have undergone into PPP model while India is providing ANS through AAI which is also an airport operator for non-privatized airports. Other countries are providing ANS through separate ANSP under the government ownership. Therefore, following to the worldwide trend we could retain the service with government entity or go into PPP with airlines rather than privatizing the ATS service.

In major airport operation, there has been mixed approaches worldwide. High income economies such as the UK and Australia have opted for privatization through IPO while Japan has just moved towardsTerminal and land side privatization. USA has adopted airport privatization pilot program but progressing at sloth's pace.

Among upper middle income countries, Mexico sold 100% share of 34 airports through IPO while South Africa has given only 4.21% shareto the private sector. Malaysia has privatized airports through IPO but maintaining a "special share" which could be used to veto for important decisions. China has privatization6 of its major international airports. BCIA and Hainan Meilan airports were privatized through IPO but retained majority share with the government. Other Chinese airports are transferred to provincial or city governments.

In the lower middle income economies, India privatized its four airports under PPP modality retaining minority government share for 30 years concession. Bolivia a South American country privatized all three international for 25 years. Kosovo's only airport is also privatized for 20 years concession to foreign investors. Egypt entered into airport privatization from2004 with 40-50 years concession. In this way most of the lower middle income economies of the world are privatizing airports retaining

minority share in government ownership and concession period ranges from 20-50 years.

Combodia the low income group country taken as a case has privatized all three of its international airports to foreign investors for 20 years. From all this discussion we try to derive some conclusion about airport privatization noted in the following points:

1. Because there always will be a public interest in the operation of airports, that are both vital assets to the community and potential monopolies, it is generally impractical to transform airports into wholly private businesses.
2. Nevertheless airport management has to be competitive and should be able to deliver customer satisfaction. In case we could deliver best quality service with government management as demonstrated by Incheon or Changi Airports there may not have come a question of privatization. Therefore the question of quality in management has been a million dollar question for airport privatization.
3. Government ownership and partnership in the development of airports, is more collaborative approach. To make such collaboration more friendly there should be clarity in the policies. The Civil Aviation Policy 2063 of Nepal (clause 4.11.2) has provision of new international airport development under PPP modality but it is a vague statement which does not specify the level of foreign investment and the period of lease. And white paper on PPP 2011 clause 1.6.2 has set priority to include 'ports' under the PPP projects. The word ports itself seems to be in vague.
4. Since airport privatization has been a political act elsewhere, in Nepal we may have to wait for some more years to see such policy implemented. Because the decision made in hurry may be reversed in the future as has been in the case of Male Airport pulled out from GMR hands recently.

**References:** as cited elsewhere in the article.

Computer Based Training System for X-ray Screeners

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ICAO Annex defines screening as the application of technical or other means which are intended to detect weapons, explosives or other dangerous devices which may be used to commit an act of unlawful interference. The aim of aviation security shall be to safeguard international civil aviation operations against acts of unlawful interference. Security equipments like X-ray machines are employed to assist in the efficient detection of arms, weapons or other restricted articles to be taken to the aircraft through the passengers or baggage. Such equipment is also used to detect materials in passenger baggage which, while not intentionally a threat, represents a hazard to the aircraft or its passengers.

Civil Aviation Academy (CAA) has been providing training to the screeners working at various Civil Aviation Offices. To date, the theoretical classes were conducted at CAA and the screeners were involved in OJT (on the job training) so as to familiarize them with the X-ray operation and identification of images. Recently, CAA has installed computer based training system "X-Screen" with the aim of enhancing the capability and competence of screeners and make them more efficient in recognizing various threats in the field of aviation. X-Screen is a computer based training system developed by Quadratica Limited, United Kingdom. Quadratica has supplied this software in many different international airports globally and is one of the major participants who trained twenty thousand screeners during the recent London Olympics in 2012.

X-Screen is a computer based security training package that has a unique blend of X-ray simulation, training courses and assessment. X-Screen helps screeners to interpret X-ray images accurately and consistently by exposing them to a vast range of threats and giving them the knowledge to understand how to get the most from the image enhancement functions on each manufacturers X-ray machine. Though the system can be operated on a standalone PC, over a networked classroom distributed across a company intranet or operated over the internet; CAA has set this over a network for eight trainees & one instructor at a time. The system is designed to develop and improve the interpretation skills of security screeners by training on high fidelity images of real bags. The system uses genuine X-ray images in conjunction with a precise replica of the operation keypad for the X-ray machine being simulated to ensure complete accuracy. Through the mix of X-ray simulation and computer based training courses; screeners receive excellent technical and practical training to take them from beginner to experienced screener standard.

Fig:- Lab Setup
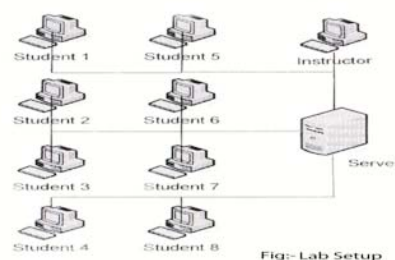
This system uses most realistic simulation experience. The modern techniques used make it possible to generate an identical simulated image to that generated by the real X-ray machine. This means that when the screener starts work in a 'live' situation they will be comfortable with the appearance and feel of their X-Ray equipment. It is important that trainee screeners can see the image on screen and view a photograph of the actual bag so they can compare the two. Trainees using X-Screen can do this easily as the images are of real bags that are photographed and can be shown to the student.

The system is designed in such a way that when an individual logs on, one has to tackle a series of lessons. Once each lesson is successfully completed, it shall be removed or else repeated. When a trainee successfully completes all lessons in the course, training switches to further advanced mode to a new course. The system simulates all the features like zoom, image enhancement features, black & white view, pseudo color, organic & inorganic material discrimination and all other aspects of X-Ray screening procedure.

The system offers detailed tracking and analysis of the user's performance and can therefore assist the training manager to identify the individual's training and development needs. X-Screen is perfect for initial or refresher training; it provides seamless progression from the beginner to experienced screener because the system focuses on developing skills required for both accurate decision making and continual improvement of X-ray interpretation. Once the system accumulates enough information about a particular trainee's capabilities, typically after going through 12-15 lessons, it automatically generate lessons. The content of these lessons is based upon a student's previous performance; if for example past performance suggests a weakness in the identification of firearm components, the lessons will have an emphasis on items containing firearm components. Trainees shall be provided feedback after the completion of the modules so as to know their mistakes or weakness and learn how to improve themselves. The system allows trainee to re-visit each image and compare their disposal decision with correct action.

The computer based system contains modules showing demonstration on screening a person prior to the checkpoints; demonstration of physical bags search; different aspects of check-point security like identification and remedial actions for different types of threats etc with relevant video clips. The display of X-Ray images is at the same resolution as that of an X-Ray machine and the button display on the monitor shall be the same layout as actual X-ray machine. The system simulates platform for major commercially available X-ray machines like Smiths Heimann, Rapiscan, L3 etc.

X-ray Image of the same baggage in different machines' platform
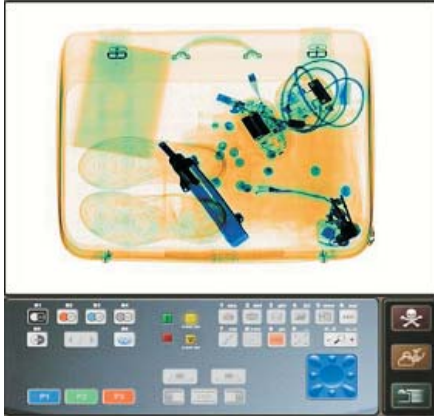
With SMITHS HEIMANN PLATFORM
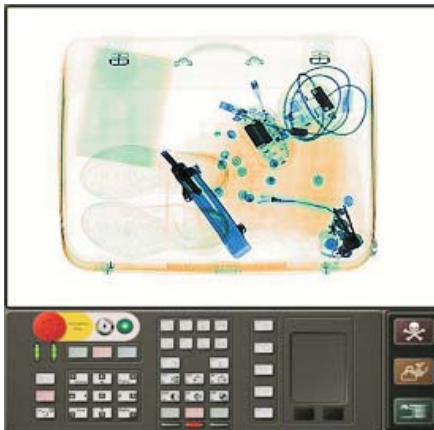
With RAPISCAN PLATFORM

It is imperative that individual screener 'training needs' are fully analyzed and targets set for attainment of screener standards within organizations. The system is designed to adapt the training to suit the needs of the individual. The system can design image interpretation training using extensive library of real bag images to challenge all screeners, from novice through to the most proficient. As in the real world, the bag images are manipulated using the simulated X-ray control strip options, exactly as on the X-ray machine itself, in order to detect threat and non-threat items. X-Screen then tests for the accuracy of interpretation and leads screeners through a comprehensive review of their session.

The major advantages of computer based training over the prevailing system for security screeners can be highlighted as:

- Exposure of trainees to a wide range of threats they would never encounter using traditional training methods.
- The ability to respond rapidly to new threats or intelligence on terrorist strategy by allowing trainers to prepare targeted training content.

- X-Ray correct images for a wide range of manufacturers/models of X-Ray equipment.
- Adaptive training ensures that trainee weaknesses are addressed.
- The system provides image library that are up to date in terms of new threats, regulatory change and new models of equipment.
- Extensive reporting which allows full documentation of each screener's training history.
- The modular nature of training allows training allows the trainer to deliver different content to different trainees in terms of skill level, machine type and environment simultaneously in the same classroom.
- Refresher training to the screeners can be provided at regular interval of time.
- Certification of X-ray screeners.

To conclude with; introducing computer based training system at CAA, Civil Aviation Authority of Nepal will be able to train the X-ray screeners working at TIA and other security officers of different Civil Aviation Offices so as to enhance their technical capabilities in screening of passengers' baggage and add a brick toward the aviation security.

Pokhara Airport.

Human factor in aviation

Human factor includes all of those factors which influence human performance or cause failures. These factors include physical, physiological, pathological, psychological, psycho-social, environmental and organizational factors. Human beings, due to the limitation of these factors, tend to make mistakes. Therefore, it is unreasonable to expect error-free human performance. The study of `human factor' in an organization involves gathering information about human abilities, limitations and other characteristics and applying it to tools, machines, systems, tasks and environment.

The study of human factors is important in aviation which is one of the most rapidly growing industries in the modern era. Despite rapid gain in technology, humans are ultimately responsible for ensuring the success and safety of aviation industry. The success of this industry underlies in ensuring maximum level of safety. As realization of cent percent safety is almost impossible, striving for the maximum level of safety remains the ultimate target in this field. Approximately 60-80 percent of the aviation related accidents have been attributed to human error. It has truly been said that human factors cause human error and human errors cause accidents. That's why the aviation industry has begun to shift its focus to the term ' human factor'. In aviation, human factor includes better understanding how humans can most safely and efficiently be integrated with technology. That understanding is then translated into design, training policies and procedures to help humans perform better.

The front faces directly involved in safety related issues are those of the pilots and the air traffic controllers. They are mere human beings bound by rules, regulations, procedures and putting their best aided by technology. Unlike the systems and equipments, they tend to make errors no matter how well trained they are or how well the equipment is designed.

The common ATC errors are ATC/Pilot Communication error (read back and hear back error), coordination failure within ATS units, misapplication of procedure, inadequate plan, loss of situational awareness, misjudgment in application of separation, inattention caused by distraction etc. Similarly, common Pilots errors are errors of communication (read/hear back), non compliance, and misjudgment during adverse weather etc. In addition, the ATCs and pilots are likely to commit deliberate violations such as circumventions, short cuts and work around. These may be intentional but usually well meaning errors where the person deliberately does not carry out the procedure correctly. They usually result from an intention to get the job as efficiently as possible. During flights the consequences of such human error can be severe.

Broadly, errors are classified as error of attention (slip), error of memory (lapse), error of procedure (mistake), and deliberate act (violation). The causes of these errors are defined as the 'dirty dozens of human factor'. As per this principle, human errors are caused by a dozen of factors which are, lack of six factors viz. knowledge, awareness, resources, communication, teamwork, assertiveness and excess of six factors, viz. pressure, stress, fatigue, distraction, complacency and norms.

Human factor analysis is considered as the most useful error management tool to address the human related performance, behavior, action or involvement together with the external factors such as environment, operating condition and machine and thus enhance aviation safety. Human errors cannot be eliminated but can be managed and mitigated. Therefore, to reduce aviation accidents, the issues of human error and its management need to be tackled by adopting the methods of controlling, mitigating or eliminating the hazards which lead to accidents. The methods can be intervention strategies and intervention techniques.

The intervention strategies are

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a) Error prevention- This includes proactive measures of identifying the possible errors, possible causes and reducing such possibility of human error.

b) Performance enhancement- This includes the programmes to increase an individual's capacity to perform a given task or operation with efficiency thus improving safety status.

The intervention techniques are

a) Organizational techniques- These include adopting standard procedures and communication system, rationalizing workload, maintaining work routine, and ensuring effective supervision.

b) Personal techniques- These include increasing knowledge and skill, following procedures, prioritizing tasks, identifying change, identifying stop points, and maintaining good health by taking adequate rest.

Together with adopting the above mentioned strategies and techniques, there is need of appointing human factor specialists in the organization. The group of specialists should consider broader range of elements such as cognitive psychology, human performance, physiology, visual perception, ergonomics, and human computer interface design. The group should help the humans perform to the best of their capability while compensating for their natural limitations.

Aviation safety can thus be enhanced by preventing the occurrence of human errors and preventing those errors from developing into accident.

Airports and Aviation policy in Nepal

Nepal, Which is one of the landlocked countries of the world and a natural paradise whose more than 83% of the land mass covered by Mountain and Himalayan region, there is a high demand of air transpoart both internationally and domestically. For the operation of air transport the existence of airport of the required standard is a prima facie. In the Nepalese context there is always a hue and cry regarding the airport construction both international and domestic. So in this article i am trying to outline some of the policy and practical issues regarding the airport in Nepal.

Constructing an airport—of international standard--should not be only for the purpose of mere construction alone. Airport can never be constructed only for the sake of airport. Once an airport enters into operation there must be the possibility of at least minimum rate of return to satisfy the cost of construction with interest and total operation, maintenance and other associated costs. Airport is a facility for the safe operation of aircraft. The primary customers of any airport are airline companies whereas other stakeholders are in the role of facilitators only. So, an airport must be technically suitable for the safe operation of aircraft. Air space of an airport plays the vital role for the maneuver of aircraft before landing and after takeoff. The facilities available on ground are worthless if there is doubt in availability of adequate air space for aircraft maneuver.

It is not easy to materialize scientifically and procedurally the construction of complex, expensive and high tech infrastructure like international airports. It may take extensive study, exercise and commitment. Airports are the infrastructure of global interest, so airport infrastructures must be developed with the international norms and standards. If it is difficult to meet the international standard it would be worthless to spend resources in the name of international airport.

The safe operation of aircraft starts from an airport and ends at the airport. It means airports are one of the basic aviation infrastructures. For the safe operation of aircraft, airport itself must be safe and operated according to the international standards.

In context of Nepal, there are 54 Domestic airports including 5 under construction. It is heard that feasibility study of more than half dozen airports is underway. The data revealed by CAAN shows that   among 54 airports only 33 airports are in operation and rest are either abandoned or closed. Among the 33 airports some of the airports have very little number of flights due to the lack of passenger and cargo traffic. In terms of financial point of view only 10 airports are earning the operation cost excluding the airport maintenance and development cost. Some handful of airports like Tribhuvan International airport, Pokhara, Lukla, Biratnagar and Chandragadhi airports are fueling for the life of all 54 airports and all the civil aviation functions of Civil Aviation Authority of Nepal. What does it mean? Does it signify the sustainability of CAAN? It should be the topic of discussion in the higher policy level.

There is no distinct policy with respect to the development of airports in Nepal. It totally depends on the wish of political leaders -- ignoring all the technical and economical aspects of airport. A large number of closed or deserted domestic airports prove the state of recklessness in this area. There is a question that whether the airports whose construction and feasibility study is underway are the need of the particular area or not. It must be understood that airport is not a matter of ornament or matter of prestige only; it is the infrastructure of social and economical development of any state. There should be the practical evidence to prove the necessity of airport.

It can be argued that the operation of domestic airports in the remote and inaccessible areas despite heavy financial loss is the social responsibility of the state.

But the construction and operation of international airport without economic viability cannot be the social responsibility of a state. The international airport is considered as a hub of economic activity of any state rather than the burden to the nation.

Regarding International airport, there is only one international airport i.e. Tribhuvan International Airport (TIA) in operation in Nepal. Nepal Government is planning to develop three more regional international airports (Pokhara, Bhairahawa and Janakpur) and one full fledged international airport at Bara, Nijgadh. CAAN is investing US$ Eighty Million for the improvement of TIA and US$ twenty one Million for the up gradation of Bhairahawa (Gautam Buddha) airport as the regional international airport. Likewise the

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construction of regional airport at Pokhara, Chhinnedanda is also on the way. Similarly, a Korean company LMW has already submitted its final report to the MOCTCA for the construction of 2nd international airport at Nijgadh. A rumour has been floating that the LMW Company in its final report has forwarded some of the preconditions regarding the construction, development and operation of the international airport which are not in favor of other international airports including Tribhuvan International Airport.

It can be observed that millions is being spent worthlessly in the name of airport construction, maintenance, up gradation, development and modernization every year in Nepal. In many places of Nepal people are facing problems due to lack of basic needs of life such as water, medicine, school, bridges, etc. whereas many airports are being constructed with investment of millions. There are instances of such airports turning into grazing land or playing grounds. It is observed that some of the influential persons treat airport construction like a game. It is due to the lack of specific national policy on airport. The investment in infrastructure like airport must be governed by the central Government policy and there should be assurance of the return of the investment.

Now it's the right time to think and discuss on the policy matters regarding the airport. How many domestic and international airports does Nepal need? What may be the operation modality of the domestic airports of social sector? What sort of facilities would be provided in the different categories of airports? What must be the precondition to be fulfilled for the construction of airport? What will be the investment modalities in the airports of different nature? What will be the role of Ministry, CAAN and local authorities in the operation and maintenance of airports? How can the airports be made economically viable and sustainable? How can the airports be developed as the centre of economic activity of the region?

Discipline for the Fire Fighters

In 1970, various fire service organizational leaders in the world conceived it necessary to establish the National Fire Protection Association (NFPA) for the development of competent and standard fire service profession. Therefore, NFPA has widely been accepted as the standard of measurement for all firefighters in the world. NFPA has pointed out four major principals as follows:-

➢ Unity of Command
➢ Span of Control
➢ Division of labor

➢ Discipline

Among them, we are going to discuss about how to maintain discipline in the aviation fire service. Discipline means setting the limits or boundaries for expected performance and enforcing the activities. Enforcement of activities and direction may come from the policies, rules and regulation and authorized personnel. The competent authority must be defined and recognized to follow up the discipline. Therefore, discipline is most important guidelines for each and every fireman to be successful in their activities such as sequences of operations, proper handling the apparatus or equipments, fire extinguishing agents and rescue task, manage in intolerable conditions, learning process and improving bad attitudes.

The approach to discipline in the fire service should be to help and encourage all employees in achieving and maintaining expected standards of conduct, attendance and job performance. The aim should be to ensure consistent and fair treatment for all employees in dealing with disciplinary issues.

It is a philosophy that is first used in the sense of law enforcement in the fire fighting and rescue service. Legal document is designed and published about the discipline to inform the fire fighters in every state. However, they are not to be interpreted as to perform given task only. Discipline is needed for guidance in seeking additional knowledge to perform a given task.

Being a disciplined fireman takes commitment. It requires you to accept the fact that anything can happen at any moment. The disciplined fireman is dedicated to doing the right thing, even if no one is watching. Thus fireman should be in the right place at the right time, prepared to do what is needed.

Standard Operating Procedure (SOP) is another document to be relied upon to maintain discipline. This document provides adequate knowledge and strong guidelines to the obedient fire fighters. Some knowledgeable subject-matters are highlighted in the TIA SOP and Domestic SOP. Such highlighted subject-matters are as follows:-

Daily Drill

All fire fighters are concerned with activities like daily drill. The officers and non-officers should be engaged in different type of drill according to the weekly routine. Drill may be Situation Drill, Foam Drill, Dry and wet drill, Rescue Drill and Appliances and Equipments Drill etc. Such type of Drill will make every fire personnel capable and competent for fire fighting and rescue operation.

Theoretical Class

Such class may be fighting aircraft fire technique, rescue operation, proper handling of rescue and fire fighting equipments, handling of emergencies and chemistry of fire etc. Theoretical class will increase the knowledge of fire fighters helping them to work in the real field, i. e .in the vicinity of the airport boundary or outside airport boundary.

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Senior Fire Officer
Civil Aviation Academy

Physical Training

To be a fire fighter, good physique is needed so that heavy and strong activities can be accomplished during rescue and fire fighting. Physical training includes running, Push-up, Sit-up, chin-up, Load Bearing, volley ball, foot ball, table tennis, badminton and gym etc. Such exercise will produce strong fire fighters.

Squad Drill

Squad Drill is one of the most important drills needed for maintaining discipline among fire personnel. Fire personnel cannot accomplish their duty without learning squad drill. Squad drill is needed for completing all activities in the rescue and fire fighting service.

Equipment check

High-tech, costly and modernized equipments specially fire vehicles or breathing apparatus are needed in case aviation accident or incident. Therefore, there should be provision of such type of equipments in fire vehicles and rescue compartments at fire stations. They should always remain in readiness for possible emergencies such as aircraft accident/incident, building fire, grass fire and so on.

Therefore, Standard Operating Procedure (SOP) is strong and reliable document for Aviation Fire Service. It makes one obedient and loyal towards work, helps to maintain discipline and strong body together with keeping him/her neat and clean.

Fire Fighting occupation is one of the most honored but risky tasks in the world. The duty of a fireman includes saving life, controlling accident or incident and conserving property. The nature of a fire fighter's work is not comfortable as it is an occupation that exposes an individual to a high personal stress and risk.

The organizational behavior and its structure should be based on the chain of command and control i.e. hierarchal form. It is compulsory that discipline is main theme for every fire fighter because commanding process must always be maintained as per rules and regulations of aviation fire department.

The fire department and its organizational behavior should be clearly defined in the organizational structure, CAAN rules and regulations, and daily practices for improving the overall activities of the department.

Conclusion

Discipline is most important guideline for each and every fireman to succeed in their daily activities such as sequences of operations, proper handling of the apparatus or equipments, fire extinguishing agents and rescue task, managing intolerable conditions, learning process and improving bad attitudes. Standard Operating Procedure (SOP) to be followed in order to maintain discipline. It makes one obedient and loyal towards work, helps maintain discipline and strong body together with keeping him/her neat and clean.

The working practices must be clearly stated and should be according to the state law and organizational process. Concerned authority and person have to understand the concept of aviation fire profession and its complexities. Separate regulation is needed for providing quality service and maintaining law and order according to the international practices.

The work of a fireman is different from other aviation services. The present problems in the aviation RFF service in Nepal include the shortage of skilled manpower, need of new fire vehicle and rescue apparatus and so on. Management should be concerned regarding these issues so as to improve the quality of service being provided.

Helicopters in a remote aerodrome-talking with each other on how to improve the air-transport system in Nepal.

Training: Experience of Sharing

(Fire officer training group in Penang Intl. Airport)

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Training helps an employee to get job security and job satisfaction. The more satisfied the employee is the greater is his morale. Such an employee contributes to organizational success and there is lesser employee absenteeism and turnover. A well trained employee is well acquainted with the job and needs less supervision. Thus, there is less wastage of time and efforts. Errors are likely to occur if the employees lack knowledge and skills required for doing a particular job. The more trained an employee is, the less are the chances of committing accidents in job and the more proficient the employee becomes.

Training improves efficiency and productivity of employees. Well trained employees show both quantity and quality performance. There is less wastage of time, money and resources if employees are properly trained.

It has been said that firefighters expend as much energy during a major emergency as the players in a football game, if not more. This assertion is supported by many studies that demonstrate the need for and benefits of high levels of physical fitness in the fire service.

The sedentary hours firefighters may spend in the fire station may be as hazardous for them as fighting a fire. A major reason for high risk of heart attack in firefighters may be that they get little or no exercise while on-duty or neglect to perform while at home. The sudden, intense energy demand that is needed to fight a fire is what puts the firefighter who is not in good physical condition in grave danger. A firefighter's lack of physical fitness and training can be viewed as a matter of public safety as well as one's individual health.

A firefighter is just like an athlete as they must be properly equipped, and skilled at what they do, and fit for the demands of their jobs. Optimal fitness is a combination of lifestyle, nutrition and habits, but it cannot be reached without an appropriate level of physical fitness and training. Like coaches and athletes have long appreciated the role exercise plays in the enhancement and prevention of injury in the similar ways the same benefits need to be applied to the fire stations. So, time to time training and physical fitness is the most compulsory attribute of fire fighters.

Such training is given by Malaysia airports Consultancy Services and the company's core activities include the management, operation, maintenance and development of airports. Malaysia Airport is the operator and manager of 39 airports within Malaysia including International, domestic and Short Take Off and Landing (STOL) ports. MACS not only provides its service within Malaysia but also it has been providing the technical and consultancy service to Rajiv Gandhi International Airport in Hyderabad, India, the Indira Gandhi International Airport in Delhi, The Istanbul Sabiha Gokcen International Airport in Istanbul, Turkey and Male International Airport in Maldives.

CAAN, Fire department nominated its 13 senior officer staffs for the Fire officer course (5-9 Nov, 2012) in Penang, Malaysia and for all of us the training was quite enthusiastic and exciting because this provided us variety of new things to be followed as a fire fighter. Additionally it gave us the knowledge about our daily station management. We were eager to bring home lots of new techniques, ideas, tactics and procedures.

After the four and half hour of flight from Tribhuvan International Airport to KLIA airport we took another flight to Penang International airport. Including me there were 13 senior fire officers participating from the different airports of Nepal. The environment seemed familiar although Penang is an island but surrounded by the mountains and the temperature is slightly higher than of Kathmandu. Madame Zainon welcomed us as the training coordinator; we were in hurry that day because we had to start the training on the same day. It was only 5

minutes ride by van to reach the training center from Penang International Airport. Now we had to stay there in the hostel for next 5 days.

Duration of fire officer training was of 5 days and the contents were applicable for every fire officer. The training included different subjects like personal management, Instructional Technique, Fire fighting tactical procedure, Incident command system ICS, Routine and Drill Planning, Manage crash practice exercise, Radio telephony Procedure, Speed drill on donning Protective Clothing, Breathing Apparatus Operations, Fire Vehicle Management, Fire Store Management, Case study and Tactical Procedure, CRFFAA(Critical Rescue Fire Fighting Access Area) Concept and Types of Agent, Standard Operating Procedure) SOP etc. The training center was also new to train female fire officers of Nepal so they were also preparing and trying for further increment of facilities for female participants because before this training, they hadn't trained any female fire fighters in Malaysia Airport Training Center (MACS). Malaysian Airports do not have any female fire fighters in aviation fire fighting till date but according to them, National fire has lots of female fire fighters. The main objective of the course is to provide the participants with theories, principles and practices of fire station management, training, facilities and fire safety planning, as well and command and control at aircraft crash site to prepare them for their role as senior fire officers.

The theoretical part of the course was taught by the senior officers of Malaysia Airports Training Center, MATC and it was a nice experience to share their operation procedure and compare with our procedures. The accident /incident situational exercise was very creative and I hope it would help all the Senior Officers to deal with the real accident/ incident case which they have to handle in their own stations as a command officer and watch tower officer in the forthcoming days.

Breathing Apparatus Operation class along with the speed Drill on donning Protective Clothing (PPE and SCBA) informed about their way and technique of donning. Moreover, it made us happy that our team was faster than their team in the donning procedure of protective clothing and self contained breathing apparatus. Fire station Store management and visit was the fruitful course to go through with all the process of keeping the fire equipments in proper way. Similarly, the new thing to know was the Fire station visit and understating the total procedure of hand over and takeover of the shift, manning process, record keeping, and fire vehicle deployment process. The important thing we learnt from this visit was the proper manning process and clear report and record keeping of daily station activities which, in my opinion, is the most necessary thing to be applied on our stations as soon as possible. The three dimensional fire fighting technique for structural fire was a totally new course for every one of us. Its practical class was breathtaking and energy consuming but the best thing about this was that it let us know the different techniques which should be applied in building fire and the different ways to enter the building which is on

Breathing Apparatus donning

fire. Visit to the control tower, main fire station and fire control room was very knowledgeable and it was an achievement and experience for the whole service time.

Penang International Airport provides Fire Fighting service of category 9 and is well managed with 15 firefighters per shift giving the required service. After visiting the main fire station, fire control room, and fire watch tower we came to the conclusion that system makes everything possible. Their vehicles are properly maintained and log of each and every small things, accessories and equipments are maintained, supervised and verified every single day. Similar to our way, they also keep their proximity suits on the vehicles so that they can put on those, without loss of time, heading towards the incident site. The different thing we noticed was there was no deployment of extra staff on telephone duty because the fire watch tower officer has to handle each and every call which is for fire station except the private calls. Two people at the watch tower are available every time. There were 4 fire trucks out of which 3 were in emergency response and the fourth one was the standby vehicle. Every single vehicle is supplemented with 3 fire fighters at the time of emergency. Their fire station does not provide ambulance service at the station because the hospitals are at the nearest point so that within one minute they can be accessed.

Another thing, as a fire fighter, I would like to add here is that our stations lack some of the necessary infrastructures like smoke chamber, mock-up, and an appropriate watch tower from which the watch tower officer could view both ends of the runway clearly.

Training is a sharing process and the sharing of similar job experience between the fire fighters of different nations was a great achievement.

प्राधिकरणमा अंशदान निवृत्तिभरणको सार्थकता र चुनौती

सुनिल मूल
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जीवनको उर्जामय अवस्थाबाट सेवा प्रवेश गरी त्यसको अन्त्यसम्मको सेवामा समर्पित भए बापत त्यसपछिको बाँकी जीवन गुजाराका निम्ति त्यस्ता निवृत्त कर्मचारीहरुलाई निवृत्तिभरण दिने व्यवस्था लामो समय अघि देखि प्रचलनमा रहि आएको छ । निवृत्तिभरणलाई बोलिचालीको भाषामा पेन्सन शब्दले नामकरण गर्ने प्रचलन कर्मचारी वृत्तमा बढ्दो पाइन्छ । यस अर्थमा निवृत्तिभरण शब्दले कर्मचारीको हैसियतले पदमा रहि सेवा गरे पश्चात जीवनको उत्तरार्द्धमा आफ्नो गुजाराका लागि कठिनाई भोग्नु नपरोस् र कसैको सहारामा बाँच्न विवश नहोस् भनी नियमित मासिक रुपमा उपलब्ध गराउने रकमलाई जनाउँदछ । नेपालमा यस प्रकारको निवृत्तिभरण दिइने प्रचलन तत्कालिन राणाकालमा श्री जुद्धशमशेरको प्रधानमन्त्रीको ताकामा वि.सं.१९९३ मा जंगीतर्फ सेनाका जवानहरुका लागि भनी सैनिक द्रव्यकोषको नामबाट शुभारम्भ गरिएको थियो । त्यसको करिब ६ वर्षपछि निजामती तर्फका कर्मचारीहरुलाई खाइपाई आएको तलबको ६ खण्डको १ खण्ड बराबर निवृत्तिभरण पाउने गरी वि.सं.१९९९ देखि निवृत्तिभरण प्रणालीको सुरुआत भएको अभिलेख पाइन्छ । हालको अवस्थामा सरकारी दायित्वमा रहेका करिब साढे तीन लाखभन्दा बढि पदहरु निवृत्तिभरण पाउने पदमा विद्यमान रहेको पाइन्छ । यसमा सरकारी सेवामा रहेका निजामती तर्फका ८९ हजार कर्मचारी, सेना तर्फ ९५ हजार, प्रहरी तथा सशस्त्र तर्फ ८१ हजार, सामुदायिक तथा संस्थागत शिक्षकहरु ८८ हजार र सरकारी स्वामित्वका संगठित संस्थाहरुमा लगभग १ लाख कर्मचारी कार्यरत रहेको तथ्यांक छ भने निजामती तर्फ संचित कोषबाट निवृत्तिभरण पाउनेको संख्या एक लाख एघार्ह हजारको हाराहारीमा पुगि सकेको अनुमान गरिएको छ । सरकारले तय गरेको ५८ वर्षको सीमा पश्चात अनिवार्य अवकाश हुने व्यवस्थामा सेवा

निवृत्त हुने कर्मचारीहरुको संख्या हरेक वर्ष बढ्दो छ । यसको अर्थ हरेक वर्षहरुमा निवृत्तिभरण बापत सरकारको दायित्व बढ्दै आएको देखाउँदछ भने नेपालमा विद्यमान कुल श्रम शक्तिको ५ प्रतिशतले मात्र यस प्रकारको निवृत्तिभरण सुविधा प्राप्त गर्ने गरेको विभिन्न अध्ययनले जनाएको छ । यसले बहालवाला कर्मचारीहरुको तलव वृद्धि हुँदा निवृत्तिभरण अंकमा पनि बृद्धि हुँदै जाने व्यवस्था र आजिवन निवृत्तिभरण पाउने संवैधानीक निकायका पदाधिकारीहरुको व्यवस्थाले अझै दायित्व दिन प्रतिदिन बढाउँदै जाने निश्चितता देखाएको छ भने निवृत्तिभरण प्रणालीमा नसमेटिएका अन्य करिब ११ लाखको हाराहारीमा रहेका श्रमिक कर्मचारीहरुको बारेमा सम्बोधन हुन बाँकि रहेको देखिन्छ । यसले गर्दा बढ्दै गइरहेको निवृत्तिभरणको अंकले मुलुकको कोषमा चालु अर्थात् साधारण खर्च थेग्नमा गम्भीर एवम् चुनौतिपूर्ण बन्दै जाने प्राय निश्चित देखाएको छ । विद्यमान समयमा निवृत्तिभरणको अनुपात साढे १० अर्ब नाघेको अनुमान छ । यसको आकार समयसँगै डरलाग्दो स्थितिमा परिणत हुँदै जाने अनुमान एकातर्फ देखिएको छ भने अर्कोतर्फ यसको समुचित व्यवस्थापन गर्ने कार्य प्रतिदिन चुनौतिपूर्ण बन्दै गएको देखिन्छ । यसो हुनुमा बदलिँदो समय अनुरुप आधुनिक बैज्ञानिक प्रविधिसँग आत्मसात गरी हातेमालो गर्न नसक्नु र निवृत्तिभरण कोषहरुको जिम्मेवारी बोकेका संस्थाहरु बिच तदनुरुपको आवश्यक समन्वय र सहकार्यको अभाव प्रमुख रुपमा देखिएको पाइन्छ ।

यिनै तथ्यहरुलाई मनन् गरी भावी दिनको सुनिश्चतता र दिगो निवृत्तिभरण प्रणालीलाई व्यवस्थित गर्नका लागि सेवारत कर्मचारीका लागि सेवा अवधि भित्रै निवृत्तिभरण रकम छुट्याई खर्च व्यवस्थापन प्रभावकारी तुल्याउने अभिप्रायले सरकारले निवृत्तिभरण कोषको आवश्यक व्यवस्था गरी अंशदान निवृत्तिभरणको व्यवस्था अघि सारेको देखिन्छ ।

के हो अंशदान निवृत्तिभरण भनेको ?

सामान्यतया निवृत्तिभरण प्रणाली भनेको दुई प्रकारको हुने गर्दछ । एउटा सरकारको तर्फबाट मुलुकको कोषबाट व्ययभार बोकि राज्य आफैले प्रदान गर्ने र अर्को कर्मचारीले आफ्नै योगदानबाट प्राप्त गर्ने रहेका छन् । यहाँ अंशदान निवृत्तिभरण भन्नाले दोश्रो प्रणालीलाई इङ्गित गर्दछ । अर्थात् अंशदान निवृत्तिभरण भन्नाले हरेक बहालवाला कर्मचारीहरुले आफूले मासिक रुपमा पाउने तलबबाट निश्चित अंश निवृत्तिभरणका निम्ति कटाई सरकारको तर्फबाट सोहि बराबर अंश थप गरी तलब खर्च लेख्दाकै समयमा रकम छुट्याउने व्यवस्थालाई जनाउँदछ । यस प्रकारको अंशदान निवृत्तिभरणका लागि कटाइने दर विभिन्न मुलुकहरुमा विभिन्न दरले कार्यान्वयन गर्ने प्रचलन रहि आएको पाइन्छ । छिमेकि मुलुक भारतलाई हेर्ने हो भने यस प्रकारको अंशदान निवृत्तिभरण मासिक तलबको ८ प्रतिशतले कट्टि गरी उत्तिकै रकमले हुन आउने अंश थप गर्ने व्यवस्था सहित सन् २००४ बाट सेवामा नव प्रवेश गर्नेहरुका लागि यस प्रकारको व्यवस्था गरिएको थियो । त्यसैगरी नेपालमा सन् २००५ देखि सुरुमा निजामती कर्मचारी तर्फ लागु गरेको अंशदान निवृत्तिभरण व्यवस्थाले उक्त निवृत्तभरण कोषमा कर्मचारीको पारिश्रमिकबाट मासिक १० प्रतिशतले हुन आउने रकम कट्टि गरी त्यतिकै प्रतिशत रकम सरकारको तर्फबाट थप गरी जम्मा गरि दिने सहितको व्यवस्था सुरु भएको हो । हाल अन्य सेवाहरुमा पनि क्रमशः अंशदान निवृत्तभरण व्यवस्था लागू

गर्ने तर्फ प्रक्रिया अधि बढाइएको देखिन्छ । यसले नेपालमा निवृत्तिभरण सम्बन्धमा दुबै प्रकारको व्यवस्थामा आवद्ध रहि निवृत्तिभरण प्रकृयाको कार्यान्वयन हुँदै आएको देखाउँदछ । अंशदान निवृत्तिभरण प्रणाली निजामती सेवामा शुरुआत भएपश्चात क्रमशः अन्य सरकारी सेवामा समेत यसको सकारात्मक विस्तार हुँदै आएको देखिन्छ भने हालको अवस्थामा शासकिय सुधार कार्यक्रमको प्रमुख अंशको रुपमा निवृत्तिभरण प्रणालीलाई अझै चुस्त र बढी आधुनिकता तर्फ अवलम्बन गर्ने गरी अलग्गै नीति तथा कार्यक्रम अन्तर्गत समावेस गरी कार्यान्वयनमा रहेको छ । तर, नेपालमा रहेका ३६ वटै सार्वजनिक संस्थानहरुमा भने यस अंशदान निवृत्तिभरण व्यवस्थाको कार्यान्वयनमा आउन बाँकि रहेको देखिन्छ । जसमा नेपाल नागरिक उड्डयन प्राधिकरण पनि समावेश रहेको छ ।

प्राधिकरणमा निवृत्तिभरणको साविक व्यवस्था कस्तो छ ?

प्राधिकरणको स्थापना पश्चात वि.सं. २०५६ कार्तिक १८ गते देखि लागू भएको प्राधिकरण, कर्मचारीहरुको सेवाका शर्त र सुविधा सम्बन्धी नियमावली, २०५६ बमोजिम प्राधिकरण सेवाको वहालमा रहेका कर्मचारीहरुको उमेर अन्ठाउन्न वर्ष र बाह्रौं तहको पदमा छ वर्ष सेवा गरी सकेका कर्मचारीलाई अनिवार्य अवकास हुने व्यवस्था रहेको छ । यस नियमावलीले साविक नेपाल सरकारको सेवाबाट स्वेच्छाले प्राधिकरण सेवामा परिणत भएका सम्पूर्ण कर्मचारीका लागि निवृत्तिभरण पाउन सक्ने व्यवस्था गरेको छ । जस अनुसार बीस वर्ष वा सोभन्दा बढी अवधिसम्म सेवामा रहेका कर्मचारीलाई जम्मा सेवा गरेको वर्षले खाईपाई आएको अन्तिम तलबको रकमलाई गुणन गरी त्यसमा पचास अंकले भाग गरी हुन आउने अंकको हिसावलाई मासिक निवृत्तिभरणको रुपमा गणना हुने व्यवस्था रहेको छ । यस प्रयोजनका लागि वि.सं.२०४९ कार्तिक २१ भन्दा पूर्व नेपाल सरकारको निजामती सेवामा प्रवेश गरी प्राधिकरणको सेवामा परिणत भएका कर्मचारीहरुले ५८

वर्ष पूरा भई अवकास हुँदा त्यस्तो कर्मचारीहरुको सम्बन्धमा निजको उमेर ६० वर्ष पूरा हुन जति अवधि बाँकि छ सो अवधि थपी सेवावधि कायम गरिने व्यवस्था छ । त्यसैगरी विद्यमान नियमावलीले निवृत्तिभरण प्रयोजनका लागि बीस वर्ष वा सोभन्दा बढी सेवामा रहेका कर्मचारी स्वेच्छाले सेवाबाट अवकास लिएमा यसै नियमावलीले तोके अनुरुपकै निवृत्तिभरणको व्यवस्था लागू हुने गरेको छ । साथै त्यस्ता कर्मचारीलाई नियमावली बमोजिम व्यवस्था गरेको उपदान वा निवृत्तिभरण मध्ये कुनै एक सुविधा रोज्न पाउने व्यवस्था समेत रहेको छ । यस अर्थले नियमावली प्रारम्भ भएपछि प्राधिकरणको सेवामा प्रवेश गर्ने कर्मचारीहरुको हकमा निवृत्तिभरण नपाउने जनाउँदछ । तर यस्ता कर्मचारीहरुले यसै नियमावलीमा व्यवस्था रहेको उपदान भने तोकिए बमोजिम पाउने व्यवस्था गरेको देखिन्छ । यस स्थितिले विद्यमान प्राधिकरण सेवामा कार्यरत कर्मचारीहरु निवृत्तिभरणको सन्दर्भमा पाउने र नपाउने गरी दुई खण्डमा विभक्त रहेका देखाउँदछ । यस तथ्यलाई सूक्ष्म ढंगबाट हेर्ने हो भने साविक प्राधिकरणमा कार्यरत कर्मचारीहरु मध्ये निवृत्तिभरण पाउने वर्गका कर्मचारीहरुको संख्या क्रमशः घट्दो दरमा बढ्दो र निवृत्तिभरण नपाउने वर्गका कर्मचारीहरुको संख्या बढ्दो क्रममा हुँदै जाने स्थिति देखाउँछ । भन्नाको तात्पर्य एक वर्ग १०० प्रतिशतबाट ओरालोमा झरी ० प्रतिशतमा आईपुग्ने र अर्को वर्ग ० प्रतिशतबाट दिर्घकालमा १०० प्रतिशतमा पुग्ने देखाउँदछ ।

हुनत नियमावलीले निवृत्तिभरण व्यवस्थापनका लागि सेवा निवृत्त हुने कर्मचारीहरुले पाउने यस सुविधाका लागि सेवा निवृत्त कोष रहने व्यवस्था गरेको छ । त्यसैगरी उक्त कोषमा प्राधिकरणमा परिणत भएका साविक नेपाल सरकारका कर्मचारीहरुको सरकारी सेवामा गरेको सेवा अवधिको गणना गरी त्यस अवधिसम्मको हुन आउने निवृत्तिभरण बराबरको रकम नेपाल सरकारबाट प्राप्त गरी यस कोषमा जम्मा हुने उल्लेख छ ।

यस प्रकारको व्यवस्थामा प्राधिकरणले हालसम्म उक्त रकम नेपाल सरकारबाट प्राप्त गर्न बाँकि रहेको अवस्था छ । यसका लागि एकातर्फ प्राधिकरणले सो अवधि भित्रमा कार्यरत कर्मचारीहरुको यकिन निवृत्तिभरण बापत हुन आउने रकमको अंक तयार गर्न सकिरहेको अवस्था छैन भने अर्कोतर्फ उक्त रकम यकिन गरी प्राधिकरणमा उपलब्ध गराउने प्रयास सरकारीस्तरबाट पनि भएको देखिँदैन । अन्यौलको यस स्थितिमा अन्त्यमा गएर निवृत्तिभरण वापतको दायित्व सरकारमै सर्ने प्रवल संभावना देखिन्छ भने हालको अवस्थामा प्राधिकरण सेवाबाट निवृत्त हुने कर्मचारीहरुलाई नियमावलीले तोके बमोजिमको निवृत्तिभरण रकम प्राधिकरणकै स्रोतबाट हरेक वर्षको वजेटमा निश्चित अंक निवृत्तिभरणका लागि छुट्याई यसै रकमबाट कर्मचारीहरुलाई उपलब्ध गराउँदै आइरहेको अवस्था छ । जसलेगर्दा निवृत्तिभरणको माथि उल्लेख गरिएको अंक यकिन गर्न झन झन जटिल बन्दै गएको र यसको समुचित व्यवस्थापन गर्न चुनौतिपूर्ण बन्दै जाने स्थिति देखिँदै गएको छ । माथि उल्लेख गरे झैं घट्दो वर्गमा रहेका निवृत्तिभरण पाउने कर्मचारीहरुका लागि बढ्दो वर्गका कर्मचारी जुन दिर्घकालमा प्राधिकरणको नीति निर्णय गर्नेस्तरसम्ममा पुग्ने हुन्छ वर्तमान नियमावली बमोजिम निवृत्तिभरण नपाउने वर्गमा पर्न गएको यसले के त्यस्तो अवस्थामा पनि हालकै अनुरुप तयार गरिने वार्षिक वजेट रकममा निवृत्तिभरण वापतको रकम विनियोजन हुन सक्छ त ? निवृत्तिभरणको यकिन हुन बाँकि रकम के यस वर्गबाट यकिन गर्ने कार्य हुन सक्दछ ? सोचनिय देखिन्छ । यसका लागि भावी दिनमा आउन सक्ने जटिलता र चुनौतिलाई मध्येनजर गरेर निवृत्तिभरण प्रणालीसँग यी दुवै वर्गका कर्मचारीलाई कसरी आवद्ध गराउन सकिन्छ भन्ने विषयमा अहिले नै कुनै सोच नबनाउने हो भने दिर्घकालमा यसले गम्भिर समस्या ननिम्त्याउला भन्न सकिन्न ।

प्राधिकरणमा अंशदान निवृत्तिभरण किन ?

प्राधिकरणमा हरेक वर्ष निवृत्तिभरण वापतको रकम वृद्धि हुने क्रम जारी देखिन्छ । कर्मचारी नियमावलीले गरेको व्यवस्था अनुसार सेवानिवृत्त हुने कर्मचारी र निजसँग आश्रित श्रीमतीलाई आजीवन निवृत्तिभरण दिइनु पर्ने व्यवस्था छ । सालवसाली प्राधिकरणले १० करोडको अंकमा वार्षिक वजेट निवृत्तिभरणका लागि छुट्याउँदै आएको छ । पछिल्लो वर्षको आंकडालाई हेर्ने हो भने निवृत्तिभरण वापतको रकम करिव सोहि रकमको हाराहारीमा खर्च हुन जाने स्थिति देखाएको छ । यस्तो निवृत्तिभरण वापत छुट्याइएको वार्षिक रकमबाट नै नियमावलीमा व्यवस्था रहेको औषधि उपचार वापतको रकम, उपचार पेश्कि, उपभोग नगरी संचित गरिएको विदा वापतको रकम, विमा वापतको जीवन सुरक्षण रकम, चाडपर्व खर्चका साथै उपदान वापतको रकम समेत यसै कोषबाट खर्च हुँदै आइरहेको देखिन्छ । जसलेगर्दा प्रतिवर्ष सेवा निवृत्त हुनेको बढ्दो संख्या सँगै निवृत्तिभरणको रकम पनि प्रतिवर्ष बढ्दै जाने निश्चितता देखिएको छ । प्राधिकरणले हरेक वर्ष यस प्रयोजनका लागि नियमित रुपमा ठूलो परिमाणमा वजेट छुट्याउँदै जानुपर्ने देखिएको छ । कोष विहिन अवस्थाले गर्दा प्राधिकरणले यसको दायित्व यकिन गर्न नसकेको अवस्थामा खर्च व्यवस्थापन गर्न कठिनाई बन्दै जाने देखिन्छ । यसबाट राज्य भित्रको हवाई यातायात विकासका लागि पूर्वाधार तथा सुविधा विकासमा समयसाक्षेप ढंगले बढाउनु पर्ने सेवा र लगानीमा निवृत्तिभरण प्रयोजनका लागि बार्षिक रुपमा छुट्याउनु पर्ने वाध्यात्मक अवस्थाले यस्तो विकास लगानीमा न्यूनता हुँदै जाने स्थिति सिर्जना हुन सक्दछ । त्यस्तै, केहि वर्षहरुको अन्तरालमा हुने तलब वृद्धिले निवृत्तिभरण अंकमा पनि तलबको सुरु अंकको जति वृद्धि भएको छ सो को दुई तिहाईले सेवा निवृत्त कर्मचारीहरुको निवृत्तिभरण र पारिवारिक निवृत्तिभरण रकममा समेत स्वतः बृद्धि हुने हुँदा प्राधिकरणको खर्च भार सोहि अनुरुप बढ्दै जाने निश्चित नै छ । त्यसैगरी सेवामा

रहेका कर्मचारीलाई मात्र नहेरी निजको आश्रितको पनि व्यवस्था गर्नुपर्ने र पन्ध्र वर्ष सेवा अवधि पुगेको कुनै कर्मचारीको मृत्यु भएमा निजको सेवा अवधिमा बढीमा पाँच वर्ष थप गरी निजको परिवारलाई निवृत्तिभरण रोजेर लिन पाउने व्यवस्थाका कारण यो स्थिति अझै चुनौतिपूर्ण बन्दै जाने देखिन्छ । अतः दिर्घकालिन खर्च व्यवस्थापन चुनौतिको सामना गर्न निवृत्तिभरण प्रणालीलाई समय साक्षेप सुधार गर्नु जरुरी हुन्छ । भन्नाको तात्पर्य यी समस्याको निदानका लागि भरपर्दो उपाय भनेकै अंशदान निवृत्तिभरणको व्यवस्था लागु गर्नु हो । यसको कार्यान्वयनले कर्मचारीहरुले आफैले गरेको योगदानका कारण उनीहरुको भविष्यलाई सुनिश्चितता प्रदान गर्दछ अर्थात् आर्थिक संरक्षण हुन पुग्छ भने अर्कोतर्फ कोषको रकमले विभिन्न उत्पादकीय क्षेत्रहरुमा उपयोगिताको पहिचान गरी लगानी बढाउन सकिने सम्भावनाको समेत बाटो खोल्दछ । त्यसैले भविष्यमा प्राधिकरणलाई खर्च व्यवस्थापन गर्न चुनौतिपूर्ण बन्दै जाने तथ्यलाई मनन् गरी दिर्घकालीकन रुपमा प्राधिकरणको दिगो विकासमा टेवा पुर्‍याउन सक्ने अंशदान निवृत्तिभरण प्रणालीमा जाने तर्फ व्यवस्थापन गम्भिर हुनु जरुरी देखिन्छ । अंशदान निवृत्तिभरणको व्यवस्था प्राधिकरणमा लागू हुन सकेको खण्डमा यसले निवृत्तिभरण भित्रको विद्यमान प्राधिकरणको दुई खेमाको विभक्तलाई पुलको रुपमा कार्यान्वयनमा ल्याई यी दुवै वर्गका कर्मचारीहरुलाई सुनिश्चित भविष्यको मार्ग पहिल्याउन मद्दत पुग्न जाने निश्चित छ ।

अंशदान निवृत्तिभरणले प्राधिकरणमा कस्तो प्रभाव पार्छ ?

प्राधिकरण, कर्मचारी नियमावलीमा निवृत्तिभरण सन्दर्भमा जे जस्ता सुविधाहरुको आवश्यक व्यवस्था रहेतापनि पछिल्ला केहि समय देखि नियमावलीले व्यवस्था गरेको निवृत्तिभरणमा कर्मचारीहरु पूर्ण विश्वस्त हुन सकेका छैनन् । जसले गर्दा निवृत्तिभरण लिनेको संख्या भन्दा तत्काल प्राप्त हुने उपदान रकममा बढी केन्द्रित रही कर्मचारी आकर्षित हुन थालेको देखिन्छ । यसो हुनुमा

प्राधिकरणले लगानी गर्दा प्रतिफलको आधारमा नहेरी दवाव र स्वविवेकमा आधारित खर्च गर्ने पद्दतिको दिनानुदिन विकासले दिर्घकालमा प्राधिकरणको आर्थिक अवस्था खस्कने अनुमान कर्मचारी वृत्तमा व्याप्त हुनु र उपदान वा निवृत्तिभरण मध्ये कुनै एक सुविधा रोज्न पाउने नियमावलीको लचकता प्रमुख रुपमा रहेको देखिन्छ । नियमावलीले दिएको कुनै एक सुविधा रोज्न पाउने व्यवस्था निवृत्त हुने कर्मचारीको विवेकमा आधारित एक छनौट हो । तर दिर्घकालको आर्थिक अवस्थासँग जोडिएको प्रश्नले भने अवश्य स्थितिको गम्भिरता देखाउँदछ । यस्तो अवस्थामा अंशदान निवृत्तिभरण प्राधिकरणका लागी एउटा कारगर व्यवस्था हुन सक्दछ जसले प्राधिकरणमा दीर्घकालिन रुपमा अत्यन्तै सकारात्मक प्रभाव पार्ने कुरामा विश्वास लिन सकिन्छ ।

प्रस्तुत आलेखमा उल्लेख गरिएको अंशदान निवृत्तिभरण व्यवस्थाबाट प्राधिकरण र यसमा कार्यरत कर्मचारीहरुलाई के कस्तो लाभ वा हानी हुन सक्छ भन्ने सन्दर्भमा उत्सुकता बन्न सक्दछ । यस व्यवस्थाले पार्ने प्रभावको बारेमा दुवै पक्षहरुको छुट्टा छुट्टै रुपमा निम्न बुँदाहरुमा केलाउन सकिन्छ :

(क) प्राधिकरणका लागि

अंशदान निवृत्तिभरणको थालनीबाट सबैभन्दा बढी फाइदा प्राधिकरणलाई हुने देखिन्छ किनभने अंशदान निवृत्तिभरणले खर्च व्यवस्थापनमा ठूलो सहयोग पुर्‍याउँछ । अर्थात् खर्च व्यवस्थापनमा चुस्तता ल्याउनुका साथै कोषलाई सशक्त तुल्याउँछ । तर अंशदान निवृत्तिभरणका सवल पक्षको अलावा केहि दुर्वल पक्षहरु पनि देखा पर्न सक्छन् । जसलाई यसरी जनाउन सकिन्छ :

सकारात्मक पक्ष	नकारात्मक पक्ष
(१) आन्तरिक पूँजी सङ्कलन गर्नमा एउटा प्रमुख स्रोत बन्न सक्छ ।	(१) कमजोर व्यवस्थापनले दायित्व बढ्न सक्छ ।
(२) आकस्मिक दायित्वमा सुधार गर्न सकिन्छ ।	(२) लगानीले प्रतिफल उच्च हुन्छ भन्न सकिन्न ।
(३) कर्मचारी वर्गमा विश्वासको वातावरण सिर्जना हुन्छ ।	(३) थप गरिने रकममा न्यूनता आउन सक्छ ।

(४) दायित्व हस्तान्तरण गर्नमा सुविधा पुग्छ ।	(४) अवाञ्छित लाभ लिनेको संख्या बढ्न सक्छ ।
(५) प्राधिकरणको लगानी एवम् खर्च व्यवस्थापनमा मद्दत पुग्छ ।	(५) न्यून तलव आय गर्ने कर्मचारीलाई जीवनयापनमा असहजता हुन्छ ।
(६) संस्थाको स्वस्थ आर्थिक स्थितिको विकासमा टेवा पुग्छ ।	(६) थप आय स्रोतको खोजीले कार्य सम्पादनमा प्रभाव पर्न सक्छ ।

(ख) कर्मचारीका लागि

अंशदान निवृत्तिभरण व्यवस्थाले कर्मचारीहरुका लागि हित गर्ने देखिन्छ । तापनि यसका केहि दुर्वल पक्षहरु समेत देखा पर्न सक्दछन् । जसलाई निम्न बुँदामा प्रस्तुत गरिएको छ :

सवल पक्ष	दुर्बल पक्ष
(१) निवृत्तिभरण पाउने सुनिश्चितता प्रवल रहन्छ ।	(१) विद्यमान निवृत्तिभरण जस्तो सरकारी सुनिश्चितता प्राप्त गर्न सकिन्न ।
(२) प्राधिकरणले गर्ने आयमा नाफा र नोक्सानको स्थितिले यसमा न्यून प्रभाव हुन्छ ।	(२) संस्था नोक्सानीमा रहँदा थप गर्ने रकममा कटौटि वा विलम्ब हुन सक्छ ।
(३) लगानीमा गरिएको प्रतिफल उच्च भएमा प्राप्त गर्ने निवृत्तिभरण बढ्न सक्ने सम्भावना प्रवल हुन्छ ।	(३) लगानीमा ह्रास वा उचित व्यवस्थापनको अभावमा जोखिम बढ्न सक्छ ।
(४) किस्ताबन्दि सुविधामा कर्मचारीहरुको लाभका निम्ति लचकता ल्याउन सकिन्छ ।	(४) उत्तराधिकारीले पाउन कठिनाई हुन्छ ।
(५) भुक्तानीमा ढिलाई हुँदैन ।	(५) भोलिको रकम भन्दा आजको रकम महँगो हुने भएकाले यो व्यवस्था सबैमा स्विकार नहुन सक्छ ।

भावी चुनौती एवम् निदानका उपायहरु

वास्तवमा अंशदान निवृत्तिभरणको व्यवस्थाले समग्रतामा संस्थाका लागि अत्यन्तै हीत गर्ने मात्र नभई संस्थासँग आवद्ध कर्मचारीहरुमा पनि उत्तिकै सकारात्मक प्रभाव पर्ने निश्चित देखिन्छ । तापनि यसको उचित व्यवस्थापन गर्ने कार्य भने निकै चुनौतिपूर्ण बन्न सक्दछ । यस व्यवस्थाबाट जम्मा हुन आउने रकमको सङ्कलन र त्यसको केन्द्रिय व्यवस्थापन, लगानी व्यवस्थापन र उपलब्ध गराउनु पर्ने प्रक्रियागत व्यवस्थापन मध्ये कुनै एक मात्रामा कमि हुन गएमा यसले दुरगामी प्रभाव पार्न सक्ने र भावी समस्याको निदानका लागि सुरुमै विशेष ध्यान पुर्‍याउनु पर्ने हुन्छ ।

- कोषसँग सम्बन्धित सम्पूर्ण कर्मचारीहरुको अभिलेख व्यक्तिगत खाताको माध्यममा व्यवस्था गरी कट्टि तथा थप रकमको जानकारी तोकिएको समयमा सम्बन्धित कर्मचारीलाई उपलब्ध गराउने व्यवस्था हुनु पर्दछ ।

- लगानीको क्षेत्र यस्तो हुनु पर्दछ जसमा प्रतिफलको संभावना प्रवल हुनु पर्दछ । हुनत लगानीसँग जोखिमको सकारात्मक सम्बन्ध हुने हुँदा समान जोखिममा बढि प्रतिफलको सम्भावना खोजी गरी लगानी विश्लेषणको आधारमा यसको ढोका खोल्नु उचित हुन्छ ।

- कोषको रकम हिनामिना र दुरुपयोगबाट बचाउन यसको नियमन गर्ने इकाई तयार गर्नु पर्दछ । बेलाबेलाको छड्के नियमन र कोष व्यवस्थापकले तयार गरेको विवरण माथि आवश्यक सम्बोधन सहितको व्यवस्थापन हुनु पर्दछ ।

- कोषको समूचित व्यवस्थापनका लागि छुट्टै नियमका साथै आवश्यक निर्देशिकाहरु तयार गरी सो अनुरुप कार्यान्वयन हुनु पर्दछ । यस प्रकारको तयार गरिने निर्देशिकामा विशेष गरी लगानी व्यवस्थापन र रकम फिक्न सक्ने सीमा निर्धारण गर्दा त्यस्ता कर्मचारी बृद्ध हुँदा भावी आउन सक्ने चुनौतिलाई उचित सम्बोधन गर्नमा केन्द्रित हुनु जरुरी देखिन्छ । कर्मचारीको सरुवा, बढुवा हुँदा कोषको रकममा सोहि बमोजिमको व्यवस्थापन गर्ने र कर्मचारी बहाल रहुँजेल नियमित रुपमा रकम जम्मा हुने व्यवस्था गर्नु पर्दछ ।

- सम्भव भएसम्म कोषको रकम सङ्कलन गर्ने र अवकास पछि रकम उपलब्ध गराउने एकाई छुट्टा छुट्टै गर्न सकिएमा कार्यको बोझ बाँडिनुका साथै दुरुपयोगको सम्भावनामा न्यूनता आउने हुन्छ ।

- कोषको स्वच्छ, आर्थिक वातावरणको निर्माण गरी यसको सकारात्मक सन्देश सम्पूर्ण कर्मचारीहरुमा हरदम पुर्‍याउन व्यवस्थापन पक्ष सजग हुनु पर्दछ ।

- कोष संचालन गर्दा यसको संचालकको दायित्व बोकेका जिम्मेवार पदाधिकारीहरुको विवेकमा आधारित प्रक्रिया भन्दा यसको एउटा निश्चित नियमसंगत प्रक्रिया अनुसार कार्यान्वयन गर्दा बढी फाइदा पुग्न जाने तथ्यलाई आत्मसात गरिनु पर्दछ । किनभने विवेकद्वारा संचालित नीति भन्दा नियममा आधारित नीति कोषका लागि हितकर हुन्छ ।

सकेसम्म कोषको ब्याजदर बजार ब्याजदरसँग आवद्ध नगरी निश्चित समयका लागि कोषको ब्याजदर तय गरिनु उचित हुन्छ । किनकि बजार ब्याजदर समयसँगै मुद्राको माग र आपूर्तिका आधारमा तय हुने हुँदा छोटो समयमा पनि यसमा फरक पर्न सक्ने हुँदा यसको प्रभाव सकेसम्म कोषमा आउन दिनु हुँदैन । तर बजार ब्याजदर भन्दा कोषले निर्धारण गरेको ब्याजदरमा निक्कै फरक पर्न गएमा कोष संचालनमा विचलन आउन सक्ने कुरालाई भने भुल्नु हुँदैन ।

अन्त्यमा,

प्राधिकरणका लागि अंशदान निवृत्तिभरण एक नवीन अवधारणा हुन सक्दछ । सरकारले अंगालेको उदार आकास नीति सँगै प्राधिकरणबाट तदनुरुपको कार्य सम्पादनमा पुग्याउनु पर्ने जिम्मेवारी अत्यन्तै कुशलतापूर्वक अघि बढिरहेको बर्तमान परिप्रेक्ष्यमा त्यस्तो काम कारवाहिसँग प्रत्यक्ष सरोकारमा रहेका प्राधिकरणमा कार्यरत कर्मचारीहरुलाई अंशदान निवृत्तिभरण व्यवस्था लागू गरी यसको प्रभावकारी कार्यान्वयन गर्न सकेको खण्डमा कर्मचारीहरुको सुरक्षित भविष्यका साथै यो अवधारणा प्राधिकरणको विकासका लागि अत्यन्तै उपयोगी ज्याबल बन्न सक्दछ । हालको अवस्थामा अंशदान निवृत्तिभरण निजामती सेवा तर्फ कार्यान्वयनमा आई सकेको परिप्रेक्ष्यमा नेपाल नागरिक उड्डयन प्राधिकरणमा पनि यसलाई लागू गर्ने सम्बन्धमा सम्बद्ध पक्ष बेलैमा जागरुक भई क्रियाशिलता अपनाउनमा अब विलम्ब गरिनु हुँदैन ।

आवश्यकता : आन्तरिक वायुसेवाको स्थायित्व

राजु बास्कोटा
पत्रकार, आर्थिक अभियान

नेपालको आन्तरिक वायुसेवालाई स्थायित्वको चुनौति दिनदिनै बढेको छ । नेपालका अन्तरिक वायुसेवाले दशक पार गरिसकेपछि पनि अनपेक्षित समास्याका कारण स्थापित भइरहेका ब्राण्डलाई जोगाउन नसक्नु प्रमुख चुनौति बनेको छ । अहिलेकै अवस्थालाई हेर्दा स्थापित भइसकेका र सञ्चालनमा नै रहेका कतिपय वायुसेवा कम्पनीले स्थायित्व नपाउने समस्या चुलिएको छ । निजी क्षेत्रबाट स्थापना भएका आधा दर्जन भन्दा पनि कम वायुसेवाले मात्र आफ्नो सेवालाई ढुक्कले निरन्तरता प्रदान गर्न सकेका छन् । निकै तामझामका साथ सञ्चलनमा आएपनि अधिकाङ्श वायुसेवा विभिन्न कारणले झुल्कने र अस्ताउने क्रम पनि बढेको छ । सञ्चालनमा आएका वायुसेवाले पनि आर्थिक समस्या, व्यवस्थापकीय कमजोरी र दुर्घटनामा जहाज गुमाउनुपरेको लगायतका कारण बन्द भएका उदाहरण प्रशस्त छन् ।

नेपालमा बढ्दै गएको पर्यटन क्षेत्रको पहुँच र नेपालीको खर्च गर्ने क्षमता भएको बृद्धिले जहाज चढ्न सक्ने पहुँचलाई बढाएको छ । दुर्गम क्षेत्रका जहाज अनिवार्य आवश्यकता हो । जसको कारण दुर्गम क्षेत्रलाई वाध्यताको साधन हो भने सुगमका लागि विलासिताको माध्यम । यसर्थ जहाज चढ्ने नेपालीको ठूलो हिस्सा पनि सुगम क्षेत्रमा विलासितामा नै बढि छ । जसले गर्दा दुर्गम क्षेत्रमा जहाज चढ्ने भन्दा निकै ठूलो हिस्सा सुगम क्षेत्रमा रहेको छ । उदाहरणको लागि दुर्गम क्षेत्रमा उडान गर्ने नेपाल वायुसेवा निगम, तारा एयर र सोही क्षेत्रमा उडान गर्ने जहाजको यात्रु सङ्ख्या भन्दा सुगम गन्तव्यका उडान गर्ने बुद्ध र यती, गुण एयरको यात्रु सङ्ख्या निकै राम्रो छ ।

अन्तरराष्ट्रिय हवाई यातायात सङ्घठन (आयटा)ले एशियाली मुलुकमै अबको केही वर्षमा नै हालको अवस्थाभन्दा दुईगुणाले एयरलाइन्स व्यापार बृद्धि हुने अनुमान गरेको छ । यसको अर्थ एशियाली मुलुकमा मात्र नभएर हवाई क्षेत्रको व्यापार विश्वमा नै निकै राम्रो सम्भावना देखाएको छ । यो आधारसँग तुलना गर्ने हो भने लगानी उच्च भएपनि सम्भावना र त्यसबाट लिन सकिने लाभ पनि हवाई क्षेत्रको उल्लेख्य देखिन्छ । नेपालका भौगोलिक हिसाबले सडका यातायात जटिल र धेरै समय खर्चनुपर्ने भएकोले पनि हवाई यातायात सबैभन्दा उपयुक्त र सम्भावनाको क्षेत्र हो । सम्भावना भएरै पनि नेपालमा निजी वायुसेवाले स्थायित्व कामय गर्नु नसक्नु नै विडम्वना बनेको छ ।

आन्तरिक वायुसेवामा आर्थिक अभावका कारण समस्या झेल्दै गरेको निजी क्षेत्रको वायुसेवा कम्पनी अग्निले सात वर्षदेखि नेपाली बजारमा स्थापित ब्राण्ड नै बनाइसकेको भएपनि हाल यसको सम्पूर्ण उडान बन्द छ । सो एयरको उडानयोग्य ५ ओटा जहाज हुँदाहुँदै विग्रिएका जहाज बनाउन नसक्दा सो कम्पनीले आफूलाई पहिलेकै विश्वास दिलाउनेमा शङ्का छ । यसका सबै जहाज विक्रीमा जाने लगभग पक्का नै भइसकेको छ । 'सकेसम्म जहाज आफैं चलाउने की भन्नेमा व्यवस्थापनले निकै प्रयास गरिरहेको छ', अग्निकै उच्च कर्मचारीले भने । 'तर आर्थिक समस्याकै कारण जहाज पुनः सञ्चालन आउनसक्ने सम्भावना पनि बनिसकेको छैन ।'

यस्तै, एक दशक लामो यात्रा पार गरिसकेको हेलिकोप्टर कम्पनीको स्थापित ब्राण्ड बनाउन सफल सिम्रिक एयर जहाज बेचेर मिडियामा लगानी गर्ने तयारीमा छ । सिम्रिकले बीके ११७ नामका दुई जहाज उडान आवर नलव्याउने भन्दै ग्राण्डेड गरिसकेको छ । यसले न्युजिल्याडको एक वायुसेवालाई दुई ओटा हेलिकोप्टर विक्रिको सम्फौता गरिसकेको छ । सिम्रिकले आफ्ना ५ ओटा जहाजलाई बढाउनुको सट्टा घटाएर तीन ओटामा सिमित

गरेको छ । हेलिकोप्टर घटाउँदैमा जहाज कम्पनीले स्थायित्व पाउँदैन भन्ने पनि होइन् । बजार बढाउन नयाँ रणनीति अपनाउनु र भएका जहाजको बढिभन्दा बढि प्रयोग गर्नु पर्ने हो । यसमा पनि जहाज विक्रि गर्नुले बजारहिस्सा कमजोर भएको हुनसक्छ भन्ने अर्थ नगाउनु सार्थक नहुन पनि सक्छ । तर, कुनै समस्या नदेखिएको वायुसेवा जहाज बेच्दै हिड्नुले कम्पनीको स्थायित्वमा प्रश्न उठ्न सक्छ भन्ने हो । हुन त कम्पनी टिकाउन र भोलिका दिनमा भविष्य छ भन्ने बुझेरै कम्पनीले आफ्नै रणनीति परिवर्तन पनि गरेको हुन सक्छ ।

अग्नीले एयरको कम्पनीले कर्मचारीको खर्च, नेपाल नागरिक उड्डयन प्राधिकरणलाई तिर्नुपर्ने रकम र जहाज बनाउन गरी कूल रू. ४ करोड भन्दा बढि रकम खर्च गर्नुपर्ने अवस्था ररहेकोले समस्यामा परेको छ । सो रकम जुटाउने प्रयत्न भइरहेपनि एयरलाइन्सका नाममा कम्पनीले विभिन्न वित्तीय संस्थाबाट लिएको ऋण तिर्न नसकेपछि बैङ्कले नै जहाज लिलामी गर्ने तयारी गरिहेको छ । वित्तिय समस्याकै कारण विक्रीको तयारी भएको अग्निका जहाजको अहिलेसम्मको जहाज मूल्याङ्कन रू. १ अर्ब भन्दा बढि भएपनि खरिद गर्न चाहने कम्पनीले रू. ६५ करोडसम्म मात्र दिने रूचि देखाएका छन् । तर, कम्पनीले करीब रू. १ अर्ब पाएमा कम्पनी बेच्चे अवस्थामा रहेको अग्नि स्रोतको भनाई छ ।

पछिल्लो समय बन्द हुने वा पुनः सञ्चालनमा आउने भन्ने निर्णयको संघारमा रहेको अग्नि एयर आन्तरिक वायुसेवा मध्येको एक चरम अभावमा गुज्रिएको प्रतिनिधि कम्पनी हो । यस अवस्थासम्म आइपुग्दा जहाजको सङ्ख्या बढाउँन नसक्दा स्थायित्वका समस्यामा गुण एयर, सीता एयर, मकालु एयरलगायतका पनि अप्ठ्यारोमै चलेका छन् । यी वायुसेवाले तत्काल जहाज सङ्ख्या बढाउन नसक्ने हो भने कुनै पनि बेला पठ्यारोमा पर्ने सक्ने अवस्था रहेको छ । आन्तरिक वायुसेवाले विभिन्न कारण देखाउँदै सेवा सञ्चालन गर्न नसकेका भएपनि पर्यटन तथा नागरिक उड्डयन मन्त्रालयबाट भने हालसम्म ७६ ओटा वायुसेवा कम्पनीले इजाजत लिएका छन् । ती जहाज मध्ये हाल १५ ओटा मात्र सञ्चालनमा रहेका छन् । 'सन् १९९२ को उदार हवाई नीति पश्चात नेपालमा उडान अनुमति लिने वायुसेवा कम्पनीको सङ्ख्या हरेक बर्ष बढ्दै गएको छ', पर्यटन तथा नागरिक उड्डयन मन्त्रालयको भनाइ छ । तर, हाल सञ्चालनमा आउने कम्पनीको सङ्ख्या भने डेढ दर्जनभन्दा कम रहेको छ ।

मन्त्रालयबाट हवाई खेलकूदका गतिविधि र वायुसेवा सञ्चालको लागि अनुमति लिने कम्पनी ९४ ओटा पुगेको छन् । यस मध्ये १८ ओटाले हवाई खेलकुद, ११ ओटाले नेपालबाट अन्तरराष्ट्रिय उडान, ३ ओटाले फ्लाइङ स्कूल र बाँकी आन्तरिक वायुसेवा कम्पनी रहेका छन् । आन्तरिक वायुसेवाका कम्पनी सञ्चालनको अनुमति लिनेमा हेलिकोप्टर कम्पनी, सिङ्गल इन्जिन र मल्टी इन्जिनयुक्त जहाज कम्पनी रहेका छन् ।

हवाई सेवा कम्पनी सञ्चालन गर्न लाग्ने महङ्गो शुल्क र सञ्चालन खर्चसमेत अधिक हुने भएकोले अनुमति लिएका सबै कम्पनी सञ्चालन हुन नसकेको पाइन्छ । वायुसेवाको मन्त्रालयबाट इजाजत लिनेदेखि कम्पनी स्थापना गरेर सञ्चालन गर्दासम्म लाग्ने आवश्यक रकमको जोहो नगरि अनुमति लिने प्रचलनका कारण पनि कम्पनीको सङ्ख्या नबढेका हुन् । आवश्यक प्रक्रिया

पूरा गरेर आएका कम्पनीलाई इजाजत दिन्न भन्न नमिल्ने तथा पाएका कम्पनीले पनि नेपाल नागरिक उड्डयन प्राधिकरणबाट सञ्चालन अनुमति लिन नसक्ने स्थितिमा अझै कतिपय वायुसेवा कम्पनी अल्झि रहेका छन् ।

मन्त्रालयबाट उडान अनुमति लिएका कम्पनीमध्ये दुई दर्जन वायुसेवा कम्पनीले नेपाल नागरिक उड्डयन प्राधिकरणबाट अनुमति लिएका छैनन् । यी मध्ये आधा दर्जन हवाई खेलकूद र डेढ दर्जन वायुसेवा कम्पनी रहेका छन् । प्राधिकरणबाट उडान अनुमति लिएरमात्र कुनै पनि विमान कम्पनीले उडान सञ्चालन प्रमाणपत्र (एओसी) लिनुपर्छ । हवाई क्षेत्रको एकमात्र नियमक निकायमा एओसी लिन नआउनु नै उडान सञ्चालन गर्न सक्ने हैसियत नभएको ठहरिने प्राधिकरणको भनाई छ ।

उड्डयन प्राधिकरणबाट हालसम्म वायुसेवा कम्पनी र हवाई खेलकूद संस्था गरी कूल ७० कम्पनीले मात्र एओसी लिएका छन् । प्राधिकरणले उपलब्ध गराएको तथ्याङ्क अनुसार एक दर्जन हवाई खेलकूद गतिविधि सञ्चालन गर्ने र बाँकी आन्तरिक तथा वाह्य उडानका वायुसेवा कम्पनीले उडान अनुमति लिएको देखिएको छ ।

नेपालमा निजी क्षेत्रबाट जहाज कम्पनीको रूचि बढ्न थालको डेढ दशक भएपनि शुरुवातका केही बर्ष राम्रोसँग उडान गरेका वायुसेवा कम्पनी हाल अस्तित्वमा नै छैनन् । नेपालबाट अन्तरराष्ट्रिय उडान शुरू गरेका वायुसेवादेखि आन्तरिक उडानमा स्थापित ब्राण्ड र छवि बनाएका वायुसेवा कम्पनी व्यवस्थापकीय कमजोरी र अन्य वित्तीय समस्याले डुबेका पाइन्छन् । आफ्नो स्थापित ब्राण्ड बनाएर डुबेका वायुसेवा कम्पनीमा सन् १९९६ देखि १० बर्षसम्म सेवा प्रदान गरेको कस्मिक एयर र कम्तीमा १२ बर्ष सञ्चालन भएको सोही समयको नेकोन एयर रहेका थिए । सोही समयका आन्तरिक वायुसेवा कम्पनी स्काई लाइन एयर, साङ्ग्रिला एयर, माउन्टेन एयर, नेपाल एयरवेज, लुम्बिनी एयर, एभरेष्ट एयर पनि सञ्चालन भएर बन्द भएका थिए ।

त्यस्तै, हेलिकोप्टर कम्पनीमा कर्णाली एयर, हेलिहन्स हेलिकोप्टर, एसियन एयरलाइन्स, मनकामना एयरवेज, हिमालयन हेलिकोप्टर लगायतका कम्पनी सञ्चालनमा आएर स्थापित हुन सकेनन् । अहिले पनि सरकारबाट सञ्चालन अनुमति लिने वायुसेवा कम्पनीले पनि नेपाल नागरिक उड्डयन प्राधिकरणबाट उडान सञ्चालन प्रमाणपत्र लिन नसकेका र लिएकाले पनि उडान गर्न नसक्नेको सङ्ख्या तीन दर्जन भन्दा बढि नै रहेका छन् ।

त्यस्तै, नेपालबाट अन्तरराष्ट्रिय उडान गर्ने भन्दै मन्त्रालयबाट अनुमति लिएका एयर साङ्ग्रीला, फ्लाई यती, युनिटीएयरलाइन्स, अल्पाइन एयरलाइन्स, डाइनामिक एयरलाइन्स, कस्मिक एयरले सेवा सञ्चालन गर्ने सकेको छैनन् । नेपालका वायुसेवा कम्पनीका रूपमा अनुमति लिएका भएपनि यी वायुसेवाको कागजमा मात्र सिमित रहेको छ । उडान अनुमतिको सदुपयोग गर्दै फ्लाई यती र कस्मिकले भने केही समय अन्तररायष्ट्रिय उडान गरेका भएपनि हाल दुबैको उडान सञ्चालनमा छैन । सरकारले निजी क्षेत्रलाई प्रवर्द्धन गर्नकै लागि सन् १९९२ देखि पाँच बर्ष ट्याक्स होलिडे (कर छुट) दिएको भएपनि सो समयमा केही वायुसेवा स्थापना भए र कर छुटको बर्ष सकिएपछि बन्द पनि भए । नेपालमा आन्तरिक वायुसेवाको स्थायित्वका लागि दीर्घकालिन भिजन तथा व्यवस्थापकीय समस्याबाट माथि उठ्ने तथा आर्थिक रूपमा पनि कमजोर वायुसेवा हुन सकेका छैनन् ।

उडान सञ्चालन अनुमति लिएर हाल नियमित उडानमा हरेका वायुसेवा कम्पनीमध्ये जम्मा ८ ओटा स्थिर पखेटा भएका जहाज कम्पनी र ५ ओटा हेलिकोप्टर कम्पनी रहेका छन् । जसमध्ये जहाज कम्पनीमा एयर काष्टमण्डप, बुद्ध एयर, गुण एयर, नेपाल एयरलाइन्स, सिता एयर, तारा एयर, यती एयरलाइन्स र गोमा एयर रहेका छन् । यस्तै, हेलिकोप्टर कम्पनीमा एयर डाइनेष्टि, फिस्टेल एयर, सिम्रिक एयर, श्री एयरलाइन्स, माउन्टेन हेलिकोप्टरसञ्चालनमा रहका छन् । यसर्थ, नेपालमा भएको सम्भावना र आर्थिक लाभको क्षेत्र सहितका सम्पूर्ण पक्षबाट हेर्ने हो भने पनि आन्तरिक वायुसेवाको स्थायित्व पहिलो आवश्यकता हो ।