



Sulaiman Al-Hamdan is Appointed New President of GACA

# GE9X Engine in B777X Uses Innovative 3D Printing Technology





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# HORIZONS

# Demise of a King, and Allegiance to a King

The Saudi people and the Arab and Muslim nations and even the advanced western circles were deeply saddened by the death of King Abdullah Bin Abdul-Aziz and the loss of a strong sighted leader far who showed a lot of wisdom and determination in addressing international and regional crises and issues. The instatement of King Salman Bin Abdul-Aziz as Custodian of the Two Holy Mosques came as the best consolation for this great loss as he is renowned for his wisdom, de-



By Dr. Faisal H. Al-Sugair VP, General Authority for Civil Aviation

city will have at the end of the current year a completely new airport built in line with the latest international standards and speci; cations with a capacity of 30 million passengers in phase one rising up to 80 million passengers at the end of Phase III.

Progress and development in the Kingdom's civil aviation sector have continued with the same tempo during the past period with respect to establishing of many airport construction projects, commercial invest-

termination, righteousness, and support to his people.

Allah Almighty has blessed our beloved kingdom with very sincere leaders who never saved an effort in serving Islam and Muslims. The ¿rst words said by the Custodian of the Two Holy Mosques, King Salman bin Abdul-Aziz Al-Saud upon receiving allegiance from the Saudi people were: "we will stick with the help of Allah to the righteous path that has been followed by this Kingdom ever since its foundation by the late King Abdul-Aziz and his sons guided by Quran and Sunnah.

Our civil aviation industry will never forget the unlimited support given by our wise leadership to this strategic sector starting from the construction and development of airports and their installations, manpower quali; cation and training, to providing our national air carrier (Saudia) with its big Aeet of aircraft. KKIA in Riyadh will witness a quality shift while Jeddah ments, launching of restructuring and privatization programs, and keeping pace with the rapid improvement in aviation services worldwide. At the same time almost all the Kingdom's airports are experiencing expansion and development projects which enabled airline companies to access new markets, thus giving travellers new options and making the Kingdom a regional center for aviation industry.

We thank Allah Almighty for the state of stability and security we are enjoying in Saudi Arabia nowadays and ask Him to have mercy on the late King Abdullah and to support the Custodian of the Two Holy Mosques, King Salman bin Abdul-Aziz and his Crown Prince and Deputy Crown Prince. We would like also to extend our sincere felicitations to HRH Prince Mohamed bin Salman, Minister of Defense, President of the Royal Court, and Special Advisor to the King. May Allah protect our Kingdom from all evils and bestow upon us ever lasting stability and security



### Sulaiman Al-Hamdan is Appointed New President of GACA

oyal Decree No. 91/1 was issued on 29/1/2015 appointing Mr. Sulaiman Bin Abdullah Al-Hamdan as new President of the General Authority of Civil Aviation at the Rank of Minister. Following his appointment His Excellency Mr. Sulaiman Al-Hamdan expressed his appreciation and thanks to the Custodian of the Two Holy Mosques, King Salman Bin Abdul-Aziz Al-Saud and to His Royal Highness Prince Migrin bin Abdul-Aziz Al-Saud the Crown Prince and Deputy Premier, and to His Royal Highness Prince Mohamed bin Naif Bin Abdulaziz Deputy Crown Prince, Second Deputy Premier, and Minister of Interior for their trust. The President of the General Authority of Civil Aviation, Sulaiman Al-Hamdan biography in brief:

- Born in 1955.
- Obtained B. Sc. in Management from College of Commerce, Riyadh University, 1979, and M. Sc. in Business Administration in 1985 from the University of New Haven in Connecticut with a major in Marketing Management and Organization.
- Worked as CEO of NAS Co.



(NAS Holding) from 2008 up to his appointment as President of the GACA.

- Worked in the Saudi Development Fund, in a number of banks, and attended many specialized training courses in and out of the Kingdom.
- Deputy Managing Director for Banking Services in (SABB).



### Al-Dhahri is Appointed Director General of KFIA



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he President of the General Authority of Civil Aviation has issued a resolution approving Eng. Yousif Al-Dhahri's promotion as Director General of KFIA starting on 6/1/2015.

Eng. Al-Dhahri has a professional degree in Civil Engineering from Minnesota, USA, and a B. Sc. in Field Engineering from King Fahd University of Petroleum and Minerals.

### New President of GACA inspects New KAIA Project

Uring an inspection tour around New KAIA Project on 16/2/2015, H.E. President of GACA, Mr. Sulaiman Al-Hamdan stated that New KAIA Project has a modern design and caters for all state-of-the-art technologies. He pointed out that the airport will be one of the Kingdom's most important facilities and will meet all the demands of Makkah Region. He assured that the project will be completed by the end of this yea, followed by a possible option to tender its operation to quali¿ ed airport operators.

H.E. pointed out that GACA is planning to expand and develop a number of domestic and international airports such KKIA Development Project in Riyadh which is expected to be complete in 2019.

He explained that GACA's general plan is to accomplish some of its big projects in partnership with the private sector. A good example is Prince Mohamed Bin Abdul-Aziz



International Airport (PMIA) in Madina which is constructed in a partnership with a Saudi company and the Turkish company TAV. Taif airport will be tendered on the same basis. Moreover, he stated that the plan is to change airports to pro; t centers. Regarding the two new air carriers' operation, he explained that this will commence before the end of the current year. He mentioned that GACA is ready when they are ready.

The tour covered the Project Media Center, International Departure Terminals, Duty Free Shops, Airport Hotel, Automated Railway System, Departure Processing Area, Commercial Areas, Transportation Center, and Haramain Railway Station. He was accompanied by GACA VP Dr. Faisal Al-Sugair and a number of GACA senior of *i* cials.

### Saudia receives a new B777-300 ER

audi Arabian Airlines has received a new B777-300 ER aircraft, which arrived at KAIA in Jeddah on 30th,January, 2015. The new aircraft is the third one of the two classes design and the 15th among other aircrafts of the same model. It is also the 77th of the total aircrafts that have been received within the airlines Àeet modernization program, which includes 90 aircraft from Boeing and Airbus.

Eng. Al-Jasser, DG of Saudia explained that the capacity of Business Class of the new aircraft is 30 seats, while economy class capacity is 351 seats.

Al Jasser pointed out that owning such an aircraft will enable Saudia to develop its network and to add



new routes to it. The new aircraft can Åy directly for more than 16 hours, and was built with modern, light materials, thus increased the economic and operational ef; ciency.

Civil Aviation March 2015, Jumada I 1436



### New International Flights from 3 Saudi Cities

audia announced on its of¿cial website on «Twitter» lunching 3 weekly new non-stop Àights between Prince Sultan bin Abdul-Aziz airport (PSAA) in Tabuk and Cairo Airport. Other operators on the same route are Egypt Air, Nesma, and Nile Air.

Gulf Air has launched its ¿rst Gassim - Manama Àight (4 times weekly) on Sunday morning, 11th January, 2015 in the presence of the director of Prince Nayef Bin Abdul-Aziz Airport at Gassim, and the Deputy CEO of operations of Al Tayar Group company (Gulf Air Agent in the Kingdom), and Saud Al Orai¿ the Regional Manager of Gassim Group and a number of media representatives and Airport employees.

On the other hand, 42 passen-



Prince Sultan bin Abdulaziz airport (PSAA) in Tabuk

gers arrived to Najran airport on Flydubai's inaugural Àight to Nejran, which landed on the 10th of January 2015 and 156 passengers departed onboard the Àight which will be Ày 4 times weekly. Khaled Al Khaibary GACA of-¿cial spokesman said that Fly Dubai is the second airline to be granted a concession to operate international Àights to and from Najran Airport.

### Bander Al Mohana is the new CEO of NAS Holding

Ational Air Services (NAS Holding) has announced the appointment of Bandar Mohana as its new chief executive, taking over from Mr. Sulaiman Abdulla Al Hamdan, who was appointed by King Salman bin Abdul-Aziz as President of the General Authority of Civil Aviation.

Al -Mohana holds M. Sc. in Actuarial and Financial Mathematics from the University of Michigan, Ann Arbor, and an



MBA from American University in Washington DC. He also holds a B. Sc. in Accounting from King Saud University in Riyadh, in addition to completing an Advanced Management Program in Harvard University.



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- APSCO is committed to providing high-quality aviation products and services to customers, toward the highest international aviation standards.
- APSCO has performed various projects in close cooperation with GACA and airport authorities on development of into-plane facilities and fuel depots at many airports in Saudi Arabia.



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# GE9X Engine in B777X Uses Innovative 3D Printing Technology

the years since the indus-Intrial age manufacturing has reached the very edges of the earth. It is something people all over the world rely on for everything from everyday tools to one-time trips on trains and airplanes. Nearly any object you hold throughout the day was at some point unrecognizable nothing but raw materials that had to be shaved and melted and put together in a long process line in a plant somewhere. Even aircraft parts are manufactured through cutting blocks of metal. GE aviation has been producing engines for aircraft companies for decades, and is now on the verge of changing the whole manufacturing process as we know it - using 3D printers to print parts for their latest engines, such as the GE9X to be featured in B777X.

A 3D printer is a wonder to anyone witnessing it work for the i rst time. No matter how technologically up-to-date a person is in this age, actually seeing the printing process is almost surreal. The printer i rst scans an item, such as a wrench, or a model automobile, and then produces a 3D replica of the item, that can even usually be used for the same purpose as the original. This is such a futuristic concept, to see full objects get "printed" out of a printer. And by: Khadija Osman\*



B777X

though this technology has only been more commonly available for use in the last three years, the method has developed to the extent of manufacturers being able to use it in building aircraft parts that rely on accuracy for safety and propulsion.

The traditional and most common method of manufacturing is the "subtractive" method, where a slab of material is shaved or cut away at to build a portion of a part, and it is the subtractive method that has been used in building airplane parts up until now. The 3D printing method that GE is using to build parts for their engines is "additive"; where parts are "grown" directly from CAD ¿ les using layers of ¿ ne metal powder and an electron beam or laser. This results in fully dense, complex parts with little to no waste of material, manufactured in a fraction of the time the subtractive method would take. The implications behind the future in additive manufacturing lead many to refer to it as The Next Industrial Revolution.

The new GE Aviation facility in Auburn, Alabama will use 50 3D printers at full capacity, which is expected to speed up the building process of the engines. The GE9X engine itself is impressive. It is the world's largest jet engine, and will ¿ nd its home on the new B777X aircraft which will begin service in 2020. The 3D printing method used with the GE9X is an electron beam melting process (EBM) developed by engineers at a GE location in Italy. EBM will be used to 3D print metal



turbine blades for the GE9X. The blades are said to be made of an advanced aerospace material: titanium aluminide, which is 50% lighter than the nickel-based alloys normally used. The process works by fusing titanium powder by an electron gun 10 times as powerful as laser beams currently used for 3D printing metal, resulting in turbine blades that are four times thicker. One of the advantages of the process itself is that it makes titanium easierto work with, since it is known for being fragile. This same process is also being used in building low-pressure blades for several other engines, and a single EBM machine can build eight stage 7 blades the GEnx (one of GE's other engines) in only 72 hours. The only foreseeable drawback of 3D printing so far is that the material being used is more expensive than nickel-based alloys traditionally used for LPT blades. However the company says that savings in fuel-consumption and weight will more than make up for the difference in cost.

After signing an agreement to purchase 150 GE9X powered B777X aircraft at the Dubai Airshow in 2013, Emirates (airline) has more recently signed a 12year agreement with GE Aviation for the maintenance, repair, and overhaul of its GE9X powered aircraft. The agreement is valued more than \$13 billion dollars for the 12 years. The people at GE insist that the 3D printing process plays a huge part in the success of their newer engines, such as the GE9X, since it helps



B777X featuring GE9X engine



#### GE9X in building phase

accomplish the goal many carriers have been keeping in mind in purchasing new aircraft: having a twin-engine jet able to Ày long-haul routes with payloads comparable to the jumbo jets. With the lighter weight, more efi cient engine blades it is believed that much money will be saved in fuel costs by the carriers. In fact, according to GE themselves, the GE9X engine will help achieve a 10% better fuel burn than the GE90-115B featured in the current B777-300ER airplanes, and 5% better speci<sup>2</sup><sub>i</sub> c fuel consumption than any other twin-asile engine aircraft in service in 2020.

The innovations and implications behind such high-tech 3D printing in the future of aviation technology can only be imagined. Might there one day be an  $ef_{\dot{c}}$ cient commercial aircraft made entirely through additive manufacturing? Only time will tell

\* Journalist, Aviation Researcher



### New Istanbul airport on target to open in 2017

n international team of architects is working on the design of Istanbul's planned new  $\in 10.2$ billion airport, which is expected to boast the world's biggest terminal complex. The gateway is set to boast three runways and a super size terminal capable of handling 90 million passengers per annum when it opens on October 29, 2017.

Its capacity will eventually rise to 150mppa, the ¿rst of two planned development phases being activated when it handles 80 million passengers per annum.

Located 35 kilometers from the centre of Istanbul on a 7,650 hectare site close to the Black Sea, the gateway will replace Atatürk Airport and provide the capacity needed to support the continued rapid growth of air traf<sub> $\dot{c}$ </sub> c and the hub operations of Turkish Airlines.

Turkish Airlines' president and CEO, TemilKotil, for one, has no doubt that the 2017 opening date is feasible, despite alleged funding issues the huge construction programme necessary to make it become a reality.

The Turkish government awarded the concession to build and operate Istanbul's new €10.2 billion gateway to the İGA Havalimanıİ letmesi AS consortium after it agreed to pay it a sizeable fee of €22.2 billion plus VAT over the



course of the 25 year operating lease. Arup has developed the master plan for the new airport, which will become one of the world's new mega-hubs, while UK-based Grimshaw – in partnership with the Nordic Of<sub> $\dot{c}$ </sub> ce of Architecture – will design the gateway's one million square metre terminal.

İGA Havalimanıl letmesi AS comprises the Turkish companies of Cengiz, Mapa, Limak, Kolin and Kalyon, all of which have a 20% stake in the Build-operate-transfer (BOT) project.

Others working on the huge project include Haptic Architects and local Turkish partners, GMW Mimarlik and TekeliSisa.

### Traffic soaring at Istanbul's Sabiha Gökçen International Airport

ow 100% owned and operated by Malaysia Airports Holdings Berhad (MAHB), a total of 1.9 million passengers passed through the Turkish gateway last january.

The increase means that  $\text{traf}_{i}c$  throughput across MAHB's global airport system increased by 22% to 8.5 million in January, despite a 4.6% dip in passenger numbers at Malaysian airports.

Kuala Lumpur International Airport accounted for four million passengers in January, 2015, while its other airports – which include the international gateways of Langkawi, Kota Kinabalu, Kuching and Penang

handled 2.7 million passengers between them.

MAHB attributes the monthly traf-¿ c decline at its Malaysian airports to the shift of Chinese New Year festive season from January in 2014 to February in 2015.

It adds that SabihaGökçen International Airport continues to do "exceptionally well" in terms of traf¿ c growth. The airport also recorded a 14.5% rise in January aircraft movements.

Another early producer of its January 2015 traf<sub>i</sub> c statistics, Copenhagen Airport, reports that 1.6 million passengers (0.7%) travelled through the airport.

The Danish gatway notes that January is traditionally one of its quietest periods and that the upturn, which marked its 21st consecutive monthly increase in passenger numbers, was driven by rising international demand.

"At more than 3% growth, our intercontinental traf¿ c continues to show good growth rates. The growth is primarily driven by the three overseas routes opened by Norwegian in 2014. Moreover, Qatar Airways added an additional four weekly frequencies to Doha from 1 February," says Thomas Woldbye, CEO of Copenhagen Airports A/S.

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### Benefits of new aviation technologies

T he air transport industry has developed a new concept for air traf¿ c management that involves signi¿ cant changes to airplanes, infrastructure, and ground systems. Known as Communications Navigation Surveillance and Air Traf¿ c Management (CNS/ATM) System. This system is becoming increasingly attractive as an option for coping more ef¿ ciently with current traf¿ c levels, as well as with the increased traf¿ c levels anticipated in the future.

The current air traf<sub>*i*</sub> c management system is based on ground navigational aids, radar, and voice communications, and will eventually be unable to cope with predicted air traf<sub>*i*</sub> c growth. In response



### By Dr. Mohamed Elfatih Elamin\*

CNS/ATM relies on space-based navigation and communication.

Operator bene; ts offered by CNS/ATM include reduced fuel burn and Àight time through direct routing, and increased payload capability for takeoff-weight-limited Àights. Using CNS/ATM, operators would be able to take advantage of several needed improvements:

- 1. Reduced separation between airplanes.
- 2. More ef; cient route changes.
- 3. Satellite communication.
- 4. No altitude loss when crossing tracks.
- 5. More direct routings.
- 1. Reduced Separation between Airplanes

In non-CNS/ATM system procedural airplane separation, errors in navigation and potential errors in voice communication between the Àight crew and air traf*i*, c con-



troller are considered when determining the necessary airspace separation between airplanes. The uncertainties of traditional voice position reporting and the delay associated with high-frequency relayed voice communications (20 to 45 minute) to make a highfrequency voice position report) require the air traf; c controller to allow a tremendous amount of airspace between each airplane, typically 100 nmi laterally and 120 nmi longitudinally. This computes to 48,000 mi2 (square miles ) of airspace to protect one airplane, and means that airplanes often operate at less-than-optimal altitudes and speeds.

However, through a satellite data link, airplanes equipped with CNS/ATM can transmit automatic dependent surveillance reports with actual position and intent information at least every  $i_{c}$  ve minutes. The position is based on the highly accurate Global Positioning System (GPS).

Digital data communication between the Àight crew and the air traf¿ c controller drastically reduces the possibility of error, and allows greatly reduced airplane separations. The combination of improvements in communication, navigation, and surveillance allows authorities to reduce required separation distances between airplanes, which in turn allows airplanes to Ày at their optimum altitude and burn less fuel.

#### 2. More Ef; cient Route Changes

Oceanic operations currently are based on weather data that are 12 to 18 hr old. By using the satellite data link that is part of CNS/ ATM, however, the latest weather



data can be transmitted to an airplane while it is en route. Flight crews can then use these data to develop optimized Àight plans, or those plans can be generated on the ground and transmitted to the airplane. Such dynamic re-routing may allow airlines to consider reducing discretionary fuel, which further reduces fuel burn or allows an increase in payload.

#### 3. Satellite Communication

Satellite communication can reduce to a few minutes the response time for an airplane requesting a step climb to a new, optimum altitude to reduce fuel burn. Response time is currently 20 to 60 min.

#### 4. No Altitude Loss When Crossing Tracks

To avoid potential conÀict, an airplane that is approaching crossing tracks must be separated by altitude from any traf<sub> $\dot{c}$ </sub> c on another track. As a result, one of the two airplanes can be forced to operate as much as 4,000 ft below optimum altitude.

But if the air traf<sub>6</sub> c controller

has timely surveillance data, including projected intent, and the airplane is able to control its speed so that it reaches the crossing point at a given time, altitude separation would be required less frequently.

#### 5. More Direct Routings

In many cases, current air traf-¿c routings are compromised to take advantage of existing navigation aids and radar coverage, resulting in less-than-optimum routings. Taking advantage of space-based navigation and communication would allow more direct (shorter) routes.

With CNS/ATM in place, operators could bened t from reduced fuel burn and Àight time as well as increased payload capacity for takeoff weight-limited Àights. As a result, costs associated with crew and engine maintenance could be reduced, allowing operators to apply the money saved toward implementing and operating new routes

\* Technical Advisor - GACA/ANS/ SED/COMMUNICATIONS



### Air-Traf¿ c Airports Statistics in Saudi Arabia 2014

Rank	Airport	(000') PAX	# of Flights	Cargo in Tons	% Change		
					PAX	Flights	Cargo
1	KAIA (JED)	28,038	182,458	499,910.8	<b>\$</b> 5.5	2.7	<b>1</b> 7.0
2	KKIA (RUH)	20,110	163,383	381,545.1	<b>&amp;</b> 8.2	<b>▲</b> 1.3	▼15.0
3	KFIA (DMM)	8,248	79,284	115,829.7	<b>▲</b> 12.8	<b>&amp;</b> 8.8	₹4.8
4	PMIA (MED)	6,338	50,848	9,390	<b>2</b> 4.6	<b>à</b> 23.7	<b>2</b> 0.1
5	Abha (AHB)	2,646	22,221	3,190.7	<b>▲</b> 10.5	<b>▲</b> 13.8	▼16.9
6	Gazan (GIZ)	1,118	9,556	1,941.8	<b>▲</b> 11.5	<b>▲</b> 10.0	₹4.5
7	Tabuk (TUU)	1,005	8,488	328.4	<b>\$</b> 9.2	<b>▲</b> 9.1	▼19.9
8	Al-Gassim (ELQ)	1,110	10,122	923.4	<b>▲</b> 10.2	<b>1</b> 7.2	<b>▲</b> 1.6
9	Taif (TIF)	700	5,927	1,143.8	<b>à</b> 17.9	<b>▲</b> 21.6	<b>▲</b> 4.7
10	Yanbu (YNB)	1,574	11,888	2,731.6	<b>2</b> 5.3	<b>▲</b> 22.1	<b>▲</b> 11.2
11	Najran (EAM)	348	3,012	107.6	<b>▲</b> 5.4	<b>▲</b> 6.1	▼17.3
12	Hail (HAS)	109	1,989	9.7	<b>▲</b> 0.4	₹0.8	₹3.3
13	Bisha (BHH)	146	1,924	88.1	▼0.9	<b>▲</b> 11.7	<b>▲</b> 7.9
14	Al-Jouf (AJF)	56	966	21.0	▼1.7	<b>Å</b> 6.8	▼14.3
15	Al-Baha (ABT)	387	3,734	131.4	<b>4</b> .5	<b>▲</b> 6.5	<b>▲</b> 6.0
16	Ar'ar (RAE)	213	2,171	342.4	<b>^</b> 2.5	<b>▲</b> 5.4	₹4.8
17	Al-Ahsa (HOF)	58	1,031	18.3	<b>▲</b> 0.1	<b>▲</b> 15.3	₹28.2
18	Al-Gurayat (URY)	57	983	33.3	<b>▲</b> 6.6	<b>&amp;</b> 8.9	<b>▲</b> 14.5
19	Sharurah (SHW)	612	6,139	494.6	<b>4</b> .0	<b>▲</b> 5.8	₹6.3
20	AI-Qaisumah (AQI)	134	2,211	138.1	<b>▲</b> 2.1	<b>à</b> 3.2	<b>▲</b> 16.7
21	Wadi Al-Dawaser (WAE)	343	3,731	582.6	<b>▲</b> 1.3	<b>à</b> 3.6	▼9.1
22	Turaif (TUI)	352	6,510	354.7	<b>▲</b> 18.5	<b>▲</b> 89.6	<b>▲</b> 110.6
23	Rafha (RAH)	191	1,897	300.6	<b>▲</b> 14.0	<b>▲</b> 13.5	₹4.3
24	Wedjh (EJH)	817	7,874	243.6	<b>^</b> 2.2	<b>▲</b> 6.7	▼11.4
25	Dawadami (DWD)	14	408	0.8	<b>&amp;</b> 88.0	▲56.4	₹29.3
26	Al-ula (ULH)	22	417	2.4	▼3.9	<b>A</b> 3.4	70.5
27	Rabigh (RGB) *	0	44	0.0	<b>▲</b> 29.4	₹2.0	▼100.0
Total		74,749	589,216	1,019,805	<b>▲</b> 9.7	<b>4</b> .2	▼3.7

★ Private Àights only







Source: Information Center & Statistical Studies (GACA)

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# Forthcoming Aviation Conferences, Exhibitions & Seminars

### 15 March – 15 May 2015

#### 17 - 20 March

8th Asian Ground Handling International Conference Macao, China groundhandling.com/asia/

#### 18 - 19 March

ICAO Regional Meeting of the Ministers in Charge of Travel Documents Marrakech, Morocco icao.int/Meetings/MRTD-Morocco/ Pages/default.aspx

#### 18 - 20 March

ICAO/UNOOSA Aerospace Symposium Montréal, Canada icao.int/meetings/space2015/Pages/ default.aspx

#### 18 - 25 March

ACI Africa Board Meeting, Regional Conference & Exhibition Casablanca, Morocco aci-africa.aero/

#### 19 March

BBGA Annual Conference Croydon, UK bbga.aero/

#### 22 - 25 March

18th Annual AAAE Geographic Information Systems (GIS) Conference and Exhibition Savannah, GA, USA events.aaae.org/sites/150309/index. cfm

#### 23 - 25 March

CHC Safety & Quality Summit Vancouver, Canada chcsafetyqualitysummit.com/

U.S.-South Africa Aviation Leadership Forum Cape town, South Africa events.aaae.org/sites/140627/index. cfm

#### 23 - 26 March

ICAO Regional Facilitation (FAL) Seminar Bangkok, Thailand icao.int/APAC/Meetings/ Pages/2015-FAL.aspx

International Operators Conference (IOC2015) San Antonio, TX, USA nbaa.org/events/ioc/2015/

#### 23 - 27 March

Global Aviation Training and TRAINAIR PLUS Symposium Dublin, Ireland gatsymposium2015.diata.ie/

#### 25 - 26March

CAPA's Airlines in Transition Summit Dublin, Ireland capaevents.com/ehome/index.php?e ventid=109268&tabid=247719&

#### 25 - 27 March

Meeting on the Sustainable Development of Air Transport In Africa Antananarivo, Madagascar icao.int/Meetings/AirTransport-Madagascar/Pages/default.aspx

Air ports Canada Conference & Exhibition Vancouver, Canada aci-na.org/event/5342

#### 8 - 11 April

58th Annual AEA International Convention & Trade Show Dallas, TX, USA aea.net/convention/2015/Default.asp

#### 9 - 10 April

Global Aviation Dialogues (GLADs) Lima, Peru icao.int/meetings/GLADs-2015/ Pages/default.aspx

#### 10 - 11 April

Fifth Annual Marvel of Flight DeFuniak Springs, FL, USA marvelofflight.com/

#### 11 April

Calgary Careers in Aviation Expo Calgary, Canada careersinaviation.ca/expo/

#### 12 - 14 April

ACI-NA and AAAE Airport Board & Commissioners Conference New Orleans, LA, USA events.aaae.org/sites/150402/

#### 13 - 15 April

IATA Ops Conference Los Angeles CA, USA iata.org/events/Pages/opsconference.aspx

#### 14 - 15 April

Exploring Aircraft Operating Costs Seminar Grapevine, TX, USA theaircharterjournal.com/ industryevents/conklindd2015/

#### 14 - 16 April

MRO Americas Miami Beach, FL, USA mroamericas.aviationweek.com/ amer15/public/enter.aspx

ABACE - Asian Business Aviation Conference & Exhibition Shanghai, China abace.aero/2015/

#### 15 - 18 April

Legal Affairs Spring Conference New Orleans, LA, USA aci-na.org/event/5192

#### 17 - 23 April

49th International Aviation Snow Symposium Buffalo, NY, USA snowsymposium.org/

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#### 20 April

Easa Regulations & Continuing Airworthiness Seminar Dublin, Ireland everestevents.co.uk/

#### 20 - 21 April

**Global Aviation Dialogues** (GLADs) Cairo, Egypt icao.int/meetings/GLADs-2015/ Pages/default.aspx

AAAE/GL Chapter AAAE National Aviation Environmental Management Conference New Orleans, LA, USA events.aaae.org/sites/150401/index. cfm

#### 20 - 22 April

Business of Airports Conference Phoenix, AZ, USA aci-na.org/boa

#### 21 April

Records & Repossession Seminar Dublin, Ireland everestevents.co.uk/event/ repossessions-seminar/

21 - 23 April WATS 2015 - World Aviation Training Conference and Tradeshow Orlando, FL, USA halldale.com/wats#.VOIosXk5Ct8

#### 21 - 24 April

ACI EUROPE 24th Airport Commercial & Retail Conference & Exhibition Milan, Italy aci-europe-events.com/airportcommercial-retail/

#### 23 - 24 April

**Global Aviation Dialogues** (GLADs) Singapore, Singapore icao.int/meetings/GLADs-2015/ Pages/default.aspx

#### 26 - 29 April

IATA Ground Handling Conference Istanbul, Turkey iata.org/events/ighc/Pages/index. aspx

#### 27 - 28April

CAPA Americas Aviation Summit Las Vegas, NV, USA capaevents.com/ehome/index.php?e ventid=111147&tabid=247734&

**Global Aviation Dialogues** (GLADs) Madrid, Spain icao.int/meetings/GLADs-2015/ Pages/default.aspx

IOSA Workshop Istanbul, Turkey iata.org/events/Pages/iosaworkshop.aspx

#### 27 - 29 April

ISAGO Auditors Symposium Istanbul, Turkey iata.org/events/Pages/isagoauditors-symposium.aspx

ACI Asia-Pacific 10th Regional Assembly, Conference & Exhibition Dead Sea, Jordan aci-apaa2015.com/

#### 28 - 30 April

ICAO - WHO CAPSCA Global Symposium Montréal, Canada icao.int/Meetings/CAPSCA2015/ Pages/default.aspx

#### 29 - 30 April

ACI-NA/ACC/AGC Airport **Construction Strategy Summit** Ft. Lauderdale, FL, USA aci-na.org/event/5736

#### 2 - 3 May

Great Alaska Aviation Gathering Anchorage, AK, USA greatalaskaaviationgathering.org/

#### 4 - 6 May

Smart Airports & Regions Conference Atlanta, GA, USA saandr.com/

#### 5 - 6 May

MRO BEER 2015: Baltics, Eastern Europe & Russia Budapest, Hungary mrobeers.aviationweek.com/ beers15/public/enter.aspx

#### 5 - 7 May

AHS International's 71st Annual Forum and Technology Display Virginia Beach, VA, USA vtol.org/events/ahs-71st-annualforum-and-technology-display

Cabin Safety Conference Paris, France iata.org/events/Pages/cabin-safety. aspx

Maintenance Management Conference (MMC2015) Portland, OR, USA nbaa.org/events/mmc/2015/

#### 8 May

NBAA Business Aviation Taxes Seminar Dallas, TX, USA nbaa.org/events/taxes-seminar/2015/

#### 10 - 11 May

Aviation Africa Dubai, UAE aviationafrica.aero/the-event/

#### 10 - 12 May

The Airport Show Dubai, UAE theairportshow.com/portal/home. aspx

Southeast Chapter AAAE Annual Conference and Exposition Bentonville, AR, USA nwa2015.com/

#### 11 - 12 May

3rd Global Airport Leaders' Forum (GALF) Dubai, UAE globalairportleadersforum.com/

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