PERFORMANCE ENGINEER TASKS

For the purposes of this document, ñtaskò is defined as a distinct item of work entailing both knowledge and effort on the part of the person performing it.

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I: USE AVAILABLE DOCUMENTS TO FIND NEEDED INFORMATION

(Note: some document names are those for operators of Boeing airplanes; similar documents apply for operators of other models. It is recognized that this list is not necessarily complete; it is included only to list some of the most important and typical sources. They are not listed in any particular order.)

Airplane Flight Manual (AFM)
Flight Crew Operations Manual (FCOM)
Manufacturersô basic data manuals)
Manufacturersô flight planning and performance manuals
FAA Master Minimum Equipment List (MMEL)
Airplane Flight Manual Appendix CDL (Configuration Deviation List)
Dispatch Deviations Guide appendix (DDG)
Company dispatch deviation documents including customized MEL
Weight and Balance manuals including weighing report supplements
Software application Userôs Manuals
Aviation regulation documents (e.g. FAR parts 25 and 121, EU-OPS)
Advisory Circulars
ICAO Annexes (e.g. Annex 14, 16, etc) and other documents
Airport runway parameters source documents
FMCS Supplementary Data Documents
Route planning information including Jeppesen or equivalent data
Internet as an information source
Satellite and aerial imagery and data sources
Route maps (e.g. Jeppesen airways maps)
Instrument approach and departure procedure sources (e.g. Jeppesen)
NOTAMs
Historical environmental sources (e.g. Boeing Winds & Temps document)
Sources of current environmental information (e.g. METARs)
FAA Orders and Notices
Airline Operations Specifications (Ops Specs)
Airplane Characteristics for Airport Planning manuals
Community noise documents

II: USE AVAILABLE SOFTWARE APPLICATIONS

(Note: some software application names are those for operators of Boeing airplanes; similar software may apply for operators of other models. It is recognized that this list is not necessarily complete; it is included only to list some of the most important and typical applications. They are not listed in any particular order.)

Takeoff software, SCAP-compliant
Non-SCAP compliant takeoff software, if applicable
Digital Airplane Flight Manual performance software
Climb profile performance software
Inflight performance software
Cruise performance monitoring software
Landing software, SCAP-compliant
Non-SCAP-compliant landing software, if applicable
Comprehensive performance engineer applications
Passive onboard software (e.g. Class 1 or 2 digital flight bags, QAR)
Active onboard software (e.g. Class 3 digital flight bags, FMS)
Document authoring software (e.g. Microsoft Word, Adobe Frame)
Spreadsheet software (e.g. Microsoft Excel)
Presentation software (e.g. Microsoft PowerPoint)
Graphics software (e.g. Adobe Illustrator)
Geographic information software (e.g. ESRI ArcView, Google Earth)
Aircraft situational display software (e.g. FlightExplorer)
Flight procedure design software (e.g. Targets)
Project management software (e.g. Microsoft Project)
Database software (e.g. Microsoft Access)
Statistical data analysis software (e.g. Minitab)
Flight planning software (e.g. Sabre)
Computer-aided design software (e.g. AutoDesk)
Aircraft design software (e.g. PIANO)
Noise simulation software
Flight operations quality assessment software (e.g. POLARIS)
Regulatory compliance software (e.g. IOSA)
Handheld calculators

III: DEVELOP UNIQUE SOFTWARE APPLICATIONS OR SIMILAR

- Develop specialized software capability for unique situations (e.g. input-output routines for SCAP-compliant manufacturerôs modules, simple labor-saving algorithms for repetitive tasks, etc)
  - Spreadsheet methods
  - Programmable handheld calculators
  - Visual Basic or similar
  - BASIC, FORTRAN, C, or similar

IV: DEVELOP UNIQUE PHYSICAL TOOLS OR PUBLICATIONS

- Customized dispatch deviations information
- Graphical methods for presenting data
  - Performance charts using one or more input parameters such as weight
  - Charts or data referenced to geographic location
- Tabular methods for presenting data
- Flight procedure graphics
- Specialized tools (e.g. weight and balance graphical or numeric solutions)
- Slide rules, nomograms, whiz wheels, etc

V: PERFORMANCE TASKS NOT UNIQUE TO A SPECIFIC PHASE OF FLIGHT

- Units conversions
- Pressure altitude-geopotential altitude-tapeline altitude conversions
- Calculate atmospheric parameters
  - QNH, QFE, QNE
  - Atmospheric pressure, temperature, density for any given conditions
  - Delta, theta, sigma for any given conditions
  - Speed of sound
- Outside air temperature / total air temperature conversions
- Airspeed conversions IAS-CAS-EAS-TAS-Mach
- Calculate weight parameters
  - Adjustments to inflight weight for latitude, altitude, velocity, true track
- Payload-range assessments
  - MZFW limit
  - Takeoff weight limit
    - Certified max takeoff weight
    - Performance-limited takeoff weight
  - Fuel capacity limit
- Calculate index parameters (e.g. Cost Index) for index-based systems
- Determine airplane geometric parameters (e.g. ñlowest pointò for obstacle clearance)
- Calculate and develop performance data tables for pilots

VI: OPERATIONAL, NOT SPECIFICALLY RELATED TO PERFORMANCE

- Prepare or assist in preparation of flight crew procedures for the use of performance data, weight and balance data, dispatch deviations data, etc where applicable
- Analyze applicability of manufacturersô operations bulletins
- Prepare technical documents for pilots and dispatchers
- Use appropriate statistical methods to enable efficient evaluation of any identified operational peculiarity
- Use data and analysis to assess operational efficiency and suggest changes to operating methods
    - On-time performance
    - Profitability
- Use corporate software or system (if applicable) to accomplish system goals, and assess the effectiveness of such software/system (e.g. flight planning, capacity planning, yield management, etc)
- Delivery flight coordination and planning
- Maintain navigation database system for FMCs, route and flight planning
- Monitor takeoff/climb reduced thrust usage
    - Assure compliance with engine manufacturer warranty requirements
- Assist in fuel purchase planning
    - Forecast fleet weekly/monthly/annual fuel usage
- Maintain performance/operations documents
    - Maintain Flight Manual master copies
        - Revise paper AFMs
        - Develop/coordinate for approval AFM supplements for STCs
        - Incorporate AFM supplements
        - Incorporate Airworthiness Directives
        - Develop/maintain records-keeping system for tracking AFM changes
    - Maintain legal and technical compliance of company flight manuals
        - Assure compliance with AFM
        - Assure compliance with ADs, FARs, Ops Specs
        - Ensure technical accuracy of data and procedures
        - Ensure compliance with and maintain flight operations-related technical documents
            - Flight Crew Operating Manual
            - Other supporting documents necessary for the technical content and accuracy of the company flight manuals
- Maintain other performance/operations-related manuals
    - Weight and balance
        - Manufacturer weight and balance manuals
        - Loading system substantiation documents
        - Loading system usage documents
        - Airplane weight reports, etc.
    - Dispatch deviations documents
        - Master MEL
        - Company MEL
        - Dispatch deviations substantiation documentation, etc.
    - Others as appropriate

VI: OPERATIONAL, NOT SPECIFICALLY RELATED TO PERFORMANCE (continued)

- Conduct analyses and development necessary to support MEL
  - Support MEL/CDL system research and procedure development
  - Review MEL changes that affect flight operations engineering issues
- Evaluate and coordinate implementation of terrain databases
- Conduct and document ozone compliance analysis for non-ozone converter equipped airplanes
- Provide liaison and technical support
  - Between Operations Control, Flight Operations, Flight Dispatch, Line Maintenance, engineering, and other process participants
    - Operational reliability
    - ETOPS
    - Fuel conservation efforts
    - Fleet close-out, airplane retirement, sales, leases
    - Dispatcher and pilot training

VII: COLLABORATIVE TASKS

- Represent employer at various industry functions
- Collaborate with other industry organizations as appropriate
- Prepare and present performance discussions at industry meetings such as flight operations symposia, seminars, etc.
- Participate in industry standards organizations efforts (e.g. IATA SCAP committee)
- Participate in safety investigations and safety awareness programs
- Participate in regulatory rule-making working groups
- Participate in airport authority meetings
- Assist colleagues at other airlines with tasks not considered proprietary or competitive

VIII: TAKEOFF FLIGHT PATH

- Assess the takeoff flight path and design special procedure if necessary
  - Existing departure procedures
    - Conventional
    - RNP/RNAV
  - Noise restrictions, if any
- Assess existing airspace
  - Navigation systemsô capabilities
  - ATC
  - Possible restrictions
  - Possible turbulence
- Assess the geographic area
  - Obstacle and terrain data
- Coordinate systems and data projections

VIII: TAKEOFF FLIGHT PATH (continued)

- Determine optimized engine-failure procedures
  - Obstacle / terrain avoidance (e.g. EOSID)
  - Engine-out leveloff height
  - Engine failure at V1
  - Engine failure after V1
  - Bank angle/turn radius
  - Decision point analysis for departure from all-engine departure path
  - GPWS warnings
  - Visual impediments
  - Loss of communication procedure
  - Flight test engine failure procedures
- Determine optimized all-engine procedures
  - Leveloff height for meeting the SID
  - SID and ODP compliance
  - VMC departure paths
- Creation and analysis of RNAV / RNP procedures
- Testing/validation of RNAV/RNP procedures
  - Performance validation
  - Flight crew validation

IX: TAKEOFF

- Determine takeoff conditions
  - Determine runway data through various sources (e.g. AIP, Jeppesen, Type A Aerodrome charts, topographical maps)
    - Elevations at various points
    - Length
    - Width
    - Lineup allowances
      - Company requirements and conservatisms
      - Airplane and steering geometry
      - 90- and 180-degree turns on runway
    - Slope
      - Different methods for determining average slope
    - Obstacle data
  - Pressure altitude, temperature, runway parameters, etc
  - Runway slope accountability
  - Conversion from latitude-longitude to runway coordinates
  - Allowances for line-up distance and takeoff initiation method
  - Determine that all conditions are within limitations

IX: TAKEOFF (continued)

- Compute maximum allowable takeoff weights for any given conditions
  - Certified maximum weight
  - Runway length limit weight
    - Possible effects of V1MCG, VR
  - Climb limit weight
  - Obstacle limit weight
  - Brake energy limit weight
  - Tire speed limit weight
  - Landing limit weight
  - Zero fuel limit weight
  - Corrections to weights for QNH, wind, temperature, if applicable
- Compute relevant takeoff speeds
- Compute expected actual takeoff weight
- Compute takeoff flight path
  - Compute airplane position at any point during takeoff
- Ensure that planned actual takeoff weight is within all relevant limitations
- Assess/apply runway contamination effects as necessary
- Assess/apply MEL/CDL effects as necessary
- Assess/apply possible ACN/PCN restrictions as necessary
- Assess/apply possible noise restrictions
- Develop and implement appropriate noise abatement methods
- Monitor noise abatement violations and seek improvement
- Develop and implement takeoff obstacle avoidance procedures
- Develop and implement takeoff performance optimization procedures
  - Flap selection
    - Smaller flap setting for higher climb gradients
    - Larger flap setting for shorter takeoff distances
  - Reduced thrust
    - Benefits and penalties of reduced thrust
    - Assumed temperature (ñflex tempò) method
    - Derates
    - Combination of the two
  - Min/max V1 policy: ñV1 rangeò
    - Benefits and penalties of
      - Stop margin increased with lower V1
      - Obstacle clearance increased with higher V1
    - Procedures (e.g. V1 reduction with surplus weight)
  - ñImproved climbò procedures (i.e. takeoff speed optimization)
    - For climb limit weight improvement
    - For obstacle limit weight improvement
  - ñIntersection takeoffò policies and procedures
  - Alternate CG takeoff
  - Delay of landing gear retraction after takeoff for cooling
    - Climb performance penalty
    - Gear down time increment

IX: TAKEOFF (continued)

- Provide takeoff weights, takeoff speeds, thrust setting and engine ï failure leveloff height to flight crews and dispatchers through published charts, tabulations, or equivalent
  - Takeoff weights
    - Normal
    - MEL/CDL effects
    - Non-dry runway surface corrections
    - Effect of QNH variation
  - Thrust setting
    - Full thrust
    - Derate
    - Assumed temp/flex temp
- Monitor takeoff-relevant documents for revisions and incorporate their effects into takeoff data
  - Airplane Flight manual
  - Takeoff analysis software (e.g. AFM-DPI, STAS, etc)
  - MEL and CDL

X: INITIAL CLIMB AFTER TAKEOFF

- Gradient
  - Calculate gradient available for any given conditions
    - All-engine
    - Engine-inoperative
  - Calculate gradient required
    - All-engine SID
    - Engine-inoperative EOSID
- Speeds for climb
  - Best gradient
  - Best rate of climb
  - Minimum cost/minimum fuel
- Body attitude
- Fuel flow

XI: ENROUTE CLIMB TO ALTITUDE

- Establish climb thrust reduction policy and washout profile, if desired
- Altitude selection
  - Available altitudes
  - Optimum altitude
  - Altitude capability
  - Maneuver margins
  - Effect of maneuvering on altitude capability
  - FMC altitude selection logic definition
- Cruise altitude limitations
- Climb to altitude profile
  - Noise abatement
  - Enroute terrain avoidance ï vertical or lateral
  - Fuel economy
  - Reduced climb thrust
- Climb speed selection
  - ECON
  - For minimum climb fuel
  - For minimum fuel to a common point in cruise
  - For max gradient
  - For max rate of climb
  - Real-time changes to climb speed schedule if necessitated by ATC etc
- Time, fuel, and distance

XII: CRUISE

- Normal
  - Speed
    - ECON
    - LRC
    - Constant Mach
    - For desired arrival time
    - Effects of wind and temperature
  - Time
  - Fuel flow, TAS, fuel mileage, EPR/N1
  - Turbulent air penetration
- Step climb and enroute speed changes
- Enroute fuel temperature limits compliance
- Compliance with cabin ozone concentration regulations

XIII: DESCENT

- Normal
  - Top of descent point
  - Speed
    - ECON
    - Minimum descent fuel
    - Minimum fuel from a common cruise point
    - Specified arrival time
  - Time, fuel and distance
- Non-normal
  - Engine failure
    - Driftdown procedure
      - Terrain avoidance
      - ETOPS / ETP considerations
    - Escape route for terrain avoidance if required
  - Loss of pressurization/emergency descent
    - Determination of passenger and crew oxygen requirements
    - Emergency descent procedure
    - Escape route for terrain avoidance if required

XIV: APPROACH / MISSED APPROACH / ABORTED LANDING FLIGHT PATH

- Develop and implement missed approach / aborted landing obstacle avoidance procedures
  - Assess existing instrument procedures
    - Conventional navigation
    - RNP / RNAV
  - Assess existing airspace
    - Navigation systemsô capabilities
    - ATC considerations
    - Possible restrictions
    - Possible turbulence
  - Assess geographic area
    - Obstacle / terrain data sources
    - Coordinate systems and data projections
  - Establish and implement optimized all-engine approach procedures
    - Missed approach point compliance
    - Missed approach point below decision altitude / minimum decision altitude
    - VMC missed approach point
    - Establish and implement RNAV / RNP procedures
    - Visual approach path procedures (non_RNAV/RNP) for terrain-critical airports

XIV: APPROACH / MISSED APPROACH / ABORTED LANDING FLIGHT PATH (continued)

- Noise abatement procedures
  - Alternate approach and landing flap settings for noise abatement
  - Approach profiles
- Creation and analysis of RNAV / RNP procedures
- Testing/validation of RNAV/RNP procedures
  - Performance validation
  - Flight crew validation

- Establish and implement optimized engine-failure procedures
  - Obstacle and terrain avoidance
  - Engine failure at or before missed approach point
  - Engine failure after missed approach point
  - Decision point analysis for departure from all-engine approach path
  - Lost communications procedure
  - GPWS warnings
  - Visual impediments
- Flight test missed approach / aborted landing procedures

XV: APPROACH AND MISSED APPROACH

- Approach and landing climb limit weights
- Speeds
- Noise abatement procedures
- Possible early landing gear extension for brake cooling

XVI: LANDING

- Flap selection
  - Landing distance and brake energy considerations
- Landing field length limit weight
- Missed approach climb limit weights
- Landing speeds
- Advisory (actual) landing distances for autobrake and autoland
- Non-normal configuration landing speed and distance adjustment
- Brake energy considerations
  - ñQuick turnaroundò weight
  - Cooling times
- Assess possible tire speed considerations for non-normal landing configurations
- Assess/apply effects of runway contamination as necessary
- Assess/apply MEL/CDL effects as necessary
- Apply ACN/PCN effects as necessary

XVI: LANDING (continued)

- Runway width to allow 180-degree turn on the runway for taxi-back
- Assess effects of airport geometry and approach aids on the airplaneôs operational landing distance
- Assess effects of non-dry runway conditions on the airplaneôs operational landing distance
- Establish best means for providing landing distance data to flight crews (e.g. ACARS, paper, laptop tool)
- Provide landing data to flight crews and dispatchers through published charts, tabulations, or equivalent
    - Landing weights
        - Normal
        - MEL/CDL effects
        - Non-dry runway surface corrections
- Monitor landing-relevant documents for revisions and incorporate their effects into landing data
    - Airplane Flight manual
    - Landing analysis software (e.g. AFM-DPI, etc)
    - MEL and CDL

XVII: ROUTE AND FLIGHT PLANNING

- Analyze possible routes
    - Assess existing possible routes
        - Typical meteorological conditions
            - Enroute
            - Departure, destination and alternate airports
        - Route restrictions
        - RVSM implications
        - RNAV/RNP-ANP considerations
        - Overflight charges
        - Alternate airports
            - Suitability of available runways
                - Navaids
                - Runway lengths
            - Facilities
                - Accommodations
                - Emergency equipment
                - Maintenance capabilities
                - Fuel availability
            - Hours of operation
    - Optimize for distance
    - Navigation aids

XVII: ROUTE AND FLIGHT PLANNING (continued)

- Fuel policy
  - Standard
  - With inflight redispatch
  - Reserve fuel
    - Normal
    - Non-normal
      - Loss of pressurization
      - Engine failure
- Fuel tankering policy
- Fleet fuel mileage deterioration allowances (ñtail number flight planningò)
- Terrain considerations (e.g. minimum safe altitude)
  - Maximum inflight weight for level flight 1000 feet above terrain
  - Possible takeoff weight/payload restrictions
  - Turnback ï proceed decision point: location and/or weight
  - Inflight engine failure (ñDriftdownò)
    - Driftdown profile
  - Loss of pressurization inflight
    - Emergency descent profile
- Oxygen requirements for dispatch, passengers and crew
- Over water routes
  - Equipment requirements (e.g. life rafts)
  - Airplane certification levels
    - Ditching certified
    - Not ditching certified
    - Operating Certificate
    - Area-based exemptions (Mediterranean, US eastern coast and Caribbean)
- Overfly agreements
- Taxi times at departure and destination airports
- Payload, time, and fuel forecasts
- Fuel upload forecasts
  - Effect of weight change
  - Effect of fuel mileage deterioration change

Use appropriate tools to predict block times; identify causes of unexpected deviations from predicted block times and implement changes to method if necessary

Determine if ETOPS compliance is required for candidate routes

ETOPS versus non-ETOPS flight planning

- Develop and implement ETOPS-unique procedures

Develop inflight redispatch policies and procedures where appropriate

Assist as required in automated flight plan system

- Provide performance database
- Provide fleet data for tail number flight planning
- Coordinate with vendors
- Train personnel on use

Develop/maintain algorithms and processes for fuel tankering

XVII: ROUTE AND FLIGHT PLANNING (continued)

Monitor manufacturerôs performance data for
- Assess possible effects on flight planning data
- Incorporate revisions to flight planning data if required

XVIII: DISPATCH DEVIATIONS

Produce or assist in production of airline customized dispatch deviations documentation
Establish acceptability of operation with item(s) inoperative or missing
- Single item
- Multiple items

Establish takeoff/landing weight penalties where appropriate
Establish fuel consumption corrections where appropriate
Determine restrictions to flight procedures
- Speed and altitude restrictions
- Weight restrictions

Coordinate with Dispatch and Maintenance personnel as necessary
Assist in ferry flight planning where required

XIX: WEIGHT AND BALANCE

Maintain weight and balance documentation and delivery records
Supervise or assist in airplane weighing
- Correct for altitude and latitude
- Correct for weight item shortages or overages
- Calculate CG

Coordinate with maintenance/engineering for weight/CG changes resulting from modifications/repairs
Track airplane weight/CG changes over time
Maintain ongoing fleet weight/CG data records
Establish weight item locations as needed
- ñBalance armsò and ñbody stationsò

Establish fleet weights and fleet CGs if appropriate
Establish payload weights (e.g. standard passenger weight, baggage weight)
- Evaluate statistical data validating standard weights

Characteristics and limitations of unit load devices (ULDs)
Establish average cargo density
Establish defueling procedures

XIX: WEIGHT AND BALANCE (continued)

- Loadsheet development
  - Compute operational CG limits for takeoff
    - Certified CG limits (normal and alternate)
    - Effects of gear and flap retraction
    - Fuel usage and fuel density
    - Inflight movement of passengers and crew
    - Seating variation and cargo loading variation
  - Calculate effects of payload and fuel loading on CG position
- Stabilizer trim setting for takeoff
  - Different takeoff thrust levels
  - Weight and CG
  - Flap setting
- Determine OEW buildup
- Calculate OEW and CG
- Compute OEW index
- OEW control for fuel economy through weight minimization
  - Catering weights
  - Inflight spares, etc
  - Cargo container carriage policies
- Monitor operations to confirm that airplane operational weight limits are suitable
- Suggest changes to operational weight limits to management if appropriate
- Provide guidance/solutions for loading methods to optimize fuel mileage
- Prepare AHM560 EDP data

XX: ASSORTED SPECIAL OPERATIONAL CONSIDERATIONS

- Fuel conservation system, methods and procedures
  - Cost of time and fuel, cost index determination
  - Develop and implement fuel conservations policies and methods
  - Coordinate with Dispatch and Maintenance personnel as necessary
  - Develop and place fleet performance monitoring system into daily operations
    - Coordinate with airframe and engine manufacturers for best available information
    - Establish and maintain fuel mileage monitoring system
      - Software (APM or similar)
      - Performance tracking (HISTRY or similar)
      - Trend analysis methods
    - Gather and analyze inflight data recorded in cruise
    - Gather and analyze records of flight plan fuel burn/actual fuel burn
    - Maintain fleet fuel efficiency records
    - Identify airplane/engine conditions warranting action by maintenance/engineering

XX: ASSORTED SPECIAL OPERATIONAL CONSIDERATIONS (continued)

- Coordinate with maintenance/engineering personnel on items identified by analysis to be warranting attention (e.g. engine wash, drag reduction efforts, etc)
- Coordinate with Dispatch personnel for ñtail number flight planningò
- Assess the success of fuel conservation efforts; modify the strategies as necessary

Environmental considerations
- Noise and emissions
  - Airport requirements
  - Regulatory requirements
- Inflight radiation
- CATEX (Categorical Exclusion)

Onboard computer equipment
- Flight management computers
  - Database maintenance and updating
- Flight bag/laptop tool
  - Database maintenance and updating

Unfinished runways
- Reinforced or engineered runways
- Dirt, grass and coral runways
- Ice runways

Special navigation considerations
- GRID (Antarctica)
- TRUE (Greenland)

External installations
- Spare engine carriage
- Wing refueling pods
- Special sensory equipment

XXI: AIRPLANE MODIFICATION AND NEW AIRPLANE EVALUATIONS

Assist management personnel with evaluating performance aspects of candidate fleet additions
- Evaluate manufacturer performance data for proposed fleet additions
- Payload capability on desired routes
- Suitability to desired routes
- Suitability to system airports
- Fuel efficiency comparisons
- Time comparisons
- Thrust requirements
  - Derate thrust usage

XXI: AIRPLANE MODIFICATION AND NEW AIRPLANE EVALUATIONS (continued)

- Assess aircraft modifications
  - Engine / propeller performance predictions
  - Wing enhancement prediction
  - Aerodynamic enhancements other than wing
  - Effect on weight and CG
- Assist with aircraft flight test
  - Create test program
  - Perform parametric analysis
  - Perform data reduction
  - Evaluate results
- Detailed analyses to validate manufacturer information
  - Assess the accuracy of manufacturer information for in-service airplanes
  - Evaluate performance for proposed fleet additions
- Establish or assess performance guarantees based on most desired airplane capabilities (e.g. payload-range, cargo weight, fuel burn)
- Assess opportunities and value of possible aircraft modifications

XXII: CLASSROOM TEACHING AND PRESENTATIONS

- Present pilot performance briefings
- Present dispatcher performance training
- Make presentations to management
- Mentor new performance-related employees
- Design or assist in design of academic curricula

XXIII: FORECASTING AND CHANGE MANAGEMENT

- Assess historical data (short and long term)
  - Airport operations
  - Flight operations
  - ATC constraints
  - Environmental
- Assess and predict basic operations data (short and long term)
  - Payload
  - Block time
  - Fuel usage
- Assess effect of temporary changes on operations
  - Obstructions
  - Runway length reductions
  - Environmental events (e.g. volcanic ash)
  - Navigation outages

XXIV: AIRPORT AND OBSTACLE SURVEYING

Determine area of interest
Conduct or guide remote sensing efforts
Perform onsite GPS or CORS surveys
    Runway ends
    Taxiway positions
    Obstructions and terrain

XXV: FOQA AND POST-EVENT DATA ANALYSIS

Participate in external agency (e.g. FAA, DoD, etc) and internal company audits
Participate in internal company audits
Participate in accident/incident investigations
Develop and implement departmental audits of data such as weight and balance records, etc.
Document standard procedures and best practices
Obtain data
Determine appropriate sampling
Construct meaningful queries
Establish and present flight operations trends
Evaluate policy and procedure effectiveness

