GCANS ATFM progress

MIDANPIRG AIR TRAFFIC FLOW MANAGEMENT TASK FORCE

EIGHTH MEETING (ATFM TF/8)

(VIRTUAL, 31 OCTOBER– 1 NOVEMBER2023)

PRESENTED BY : MOHANAD ALI MOHAMMED JAWAD – ATFM MANAGER

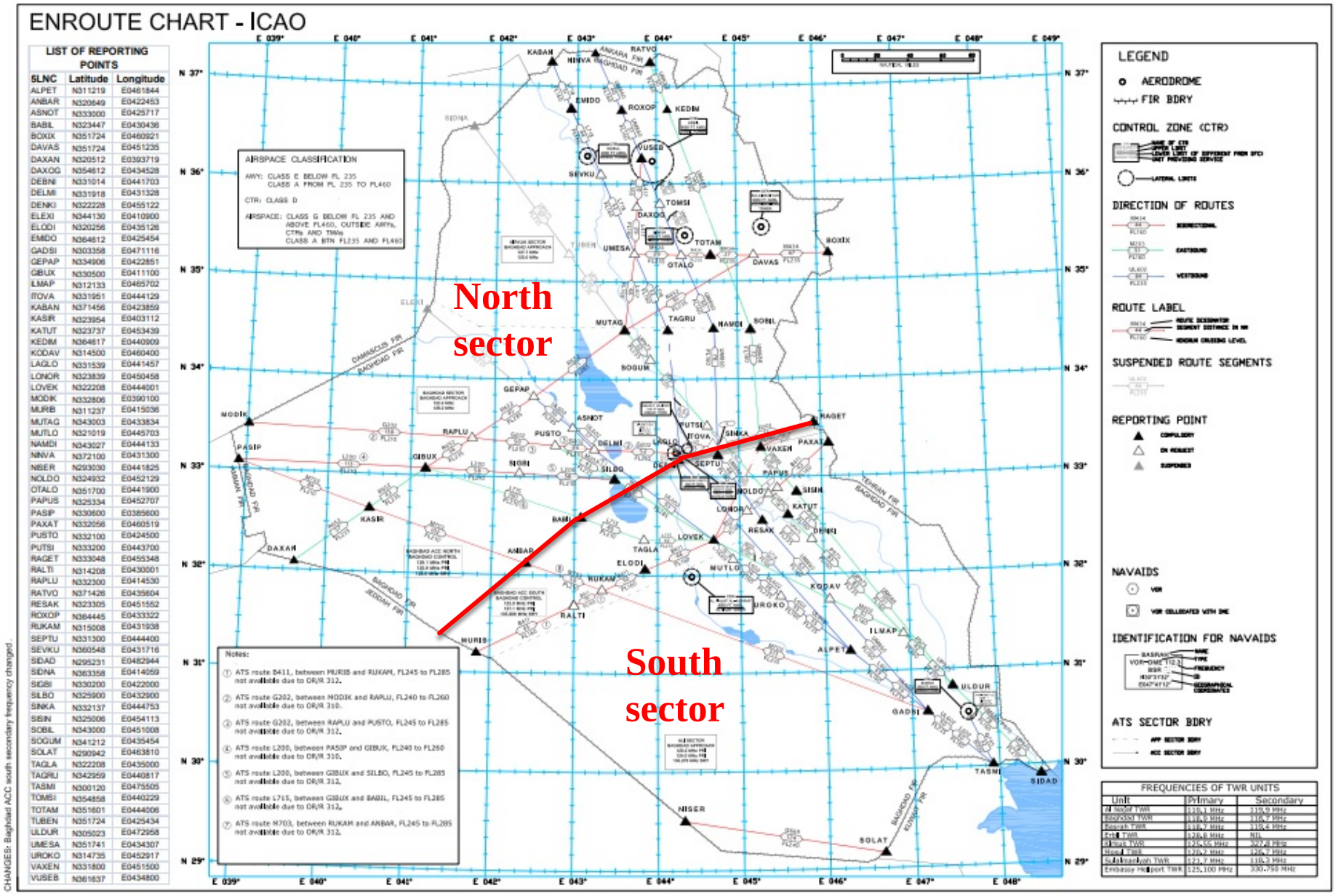
outlines

- Baghdad FIR
- GCANS ATFM CURRENT STEPS
- Calculate sector capacity (in ACC, Approach in plan).
- Establish an ATFM team and define their roles.
- Provide a basic ATFM course for self-learning.
- Implement slot coordination in Najaf during specific periods(done by Najaf OCC team).
- Perform daily, weekly, and monthly traffic analysis with traffic prediction.
- Create a draft of the GCANS NATIONAL ATFM plan.
- Send the ATFM daily plan on a daily basis.
- Conduct monthly ATFM teleconferences.
- Update Letters of Agreement (LOA) ATFM section with Tehran, shortly with Saudi Arabia.
- Design Traffic Prediction Python Tool

Baghdad FIR

- **Baghdad FIR has two main ACC sectors: North sector and South sector.**
- **Baghdad FIR has three approach sectors: Kirkuk, Baghdad, and Ali sectors.**
- **Baghdad has 6 main international airports and some military bases.**

ENROUTE CHART - ICAO



LIST OF REPORTING POINTS

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ANBAR	N320649	E0422453
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BABIL	N323447	E0430436
BOXIX	N351724	E0460921
DAVAS	N351724	E0451235
DAXAN	N320512	E0393719
DAXOG	N354612	E0434528
DEBNI	N331014	E0441703
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ELEXI	N344130	E0410900
ELODI	N320256	E0435126
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GADSI	N303358	E0471116
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LONOR	N323839	E0450458
LOVEK	N322208	E0444001
MODIK	N332806	E0390100
MURIB	N311237	E0415036
MUTAG	N343003	E0433834
MUTLO	N321019	E0445703
NAMDI	N343027	E0444133
NINVA	N372100	E0431300
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PAPUS	N325334	E0452707
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PUTSI	N333200	E0443700
RAGET	N333048	E0455348
RALTI	N314208	E0430001
RAPLU	N332300	E0414530
RATVO	N371426	E0435604
RESAK	N323305	E0451552
ROXOP	N364445	E0433322
RUKAM	N315008	E0431938
SEPTU	N331300	E0444400
SEVKU	N360548	E0431716
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SIDNA	N363358	E0414059
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TASNI	N300120	E0475505
TOMSI	N354858	E0440229
TOTAM	N351601	E0444006
TUBEN	N351724	E0425434
ULDUR	N305023	E0472958
UMESA	N351741	E0434307
UROKO	N314735	E0452917
VAXEN	N331800	E0451500
VUSEB	N361637	E0434800

FREQUENCIES OF TWR UNITS

Unit	Primary	Secondary
Al Nasir TWR	118.1 MHz	119.9 MHz
Basrah/Int TWR	118.0 MHz	118.7 MHz
Basrah TWR	118.7 MHz	119.4 MHz
Erbil TWR	128.8 MHz	NIL
Kirkuk TWR	125.55 MHz	327.0 MHz
Mosul TWR	126.2 MHz	126.2 MHz
Sulaimaniyah TWR	121.7 MHz	118.3 MHz
Embassy Heliport TWR	125.100 MHz	130.750 MHz

CHANGES: Baghdad ACC south secondary frequency changed

10/30/2023

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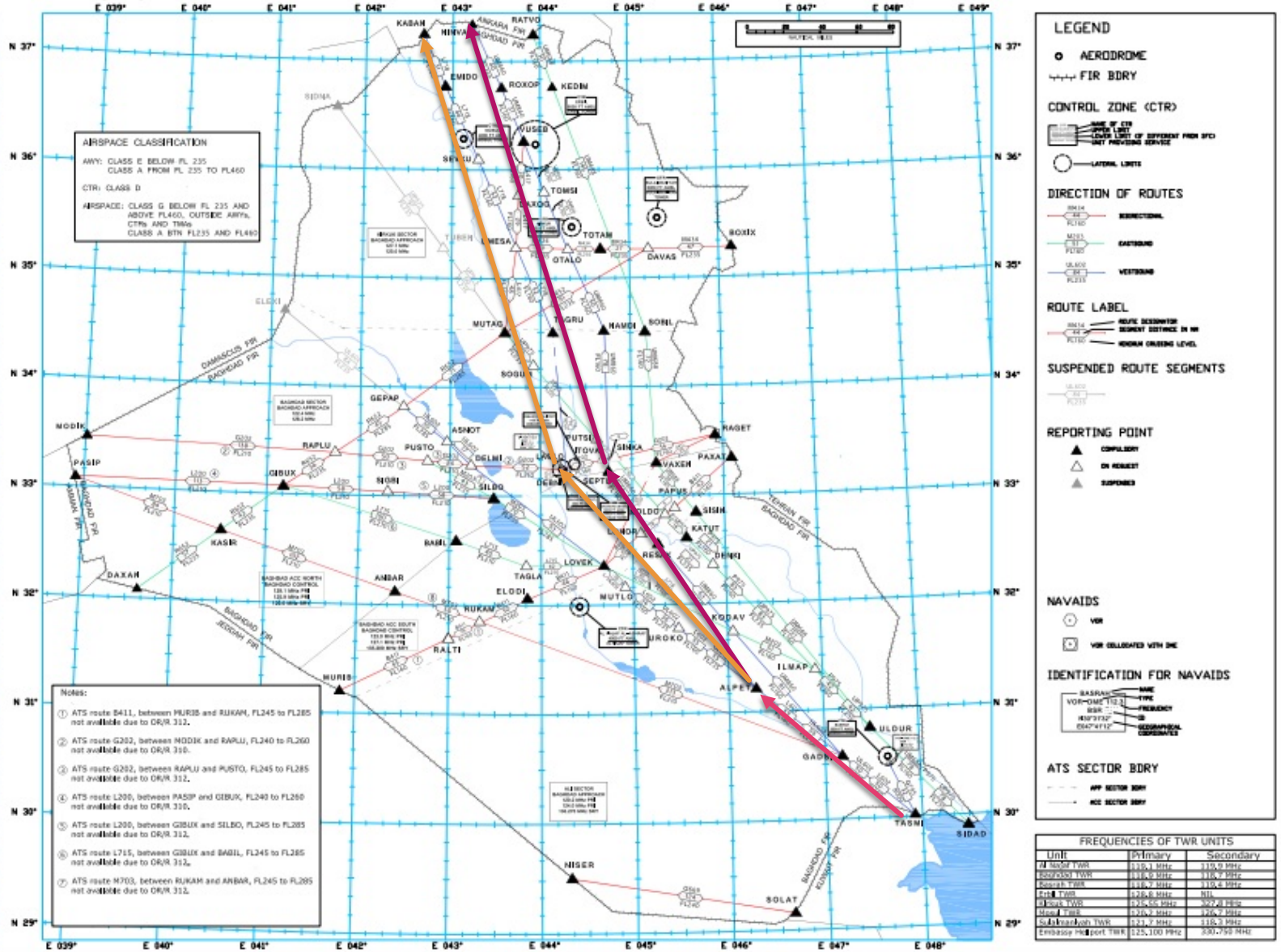

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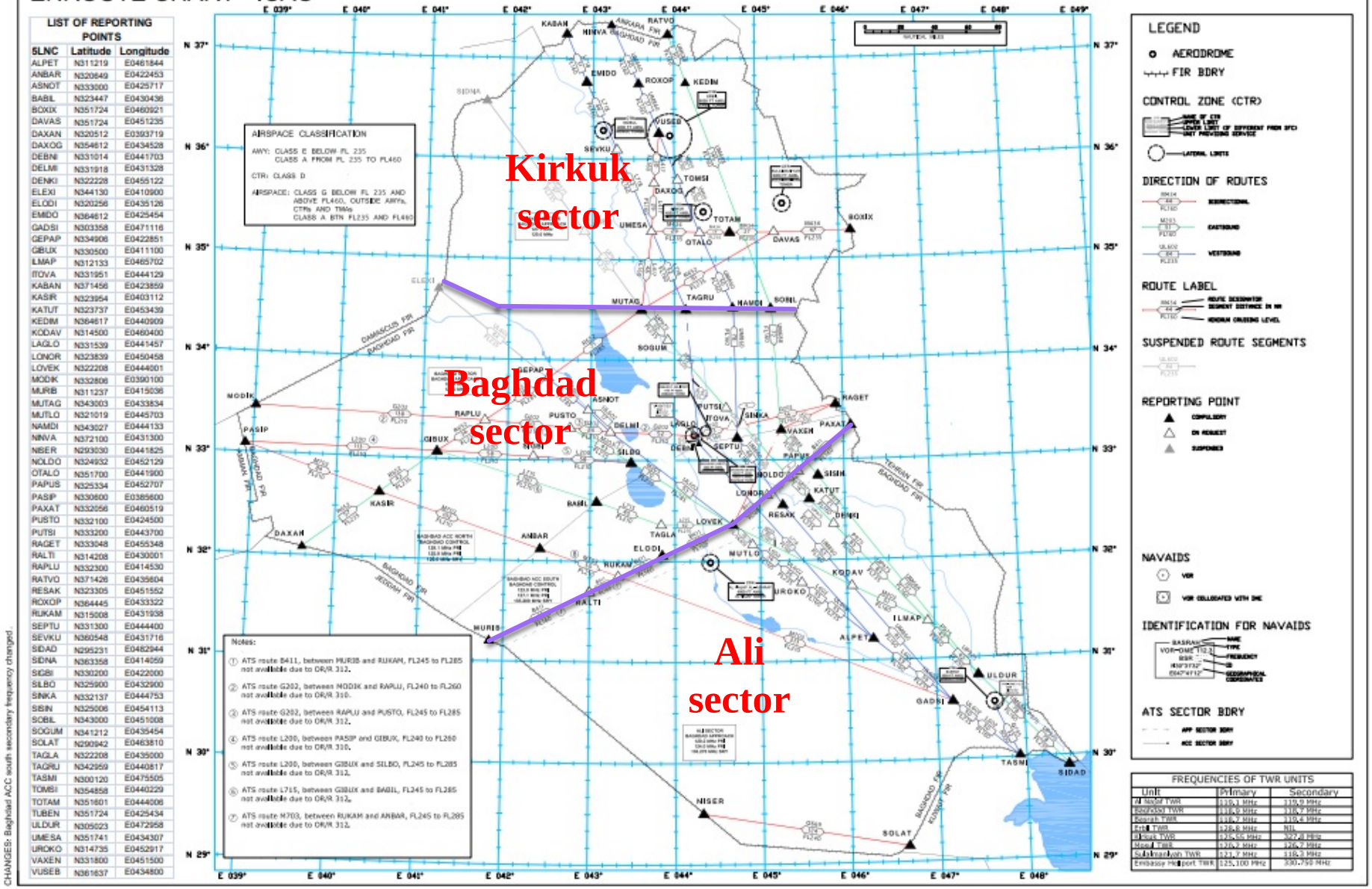

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10/30/2023

GCANS ATFM CURRENT STEPS

- Calculate sector capacity (in ACC, Approach in plan).
- Establish an ATFM team and define their roles.
- Provide a basic ATFM course for self-learning.
- Implement slot coordination in Najaf during specific periods(done by Najaf OCC team).
- Perform daily, weekly, and monthly traffic analysis with traffic prediction.
- Create a draft of the GCANS NATIONAL ATFM plan.
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Calculate Sector Capacity

- $Doratask\ equation\ c = \frac{\emptyset * \delta}{\mu * T\mu * v\mu}$

c	The number of aircraft that can be controlled simultaneously
φ	The ATCO availability factor.
δ	Average flight time of the aircraft in the sector
μ	number of communications for each aircraft in the sector
Tμ	mean duration of each message
$v\mu$	mean speed of aircraft within the sector

Establish an ATFM team and define their roles

- Establishing an ATFM team is essential. This team is responsible for coordinating and managing air traffic flow, collaborating with relevant stakeholders, and ensuring that the ATFM procedures are followed. Roles may include ATFM coordinators, traffic analysts, and communication specialists
- Delegation of ATFM measures to supervisors for effective implementation and oversight.
- Regularly communicate the pre-established times and measures to all Air Traffic Control Officers (ATCOs) internally to ensure a coordinated approach to managing air traffic flow.

Provide a basic ATFM course for self-learning.

- Offering a basic ATFM course for relevant personnel is essential to ensure that they understand the principles and procedures of air traffic flow management. This may involve self-learning materials or formal training sessions.
- Participating in workshops and training related to Air Traffic Flow Management (ATFM) is a valuable way to stay updated on best practices and industry advancements, workshop in Doha in February 2023. This workshop likely covered the latest developments in ATFM, best practices, and provided an opportunity for networking and knowledge sharing.

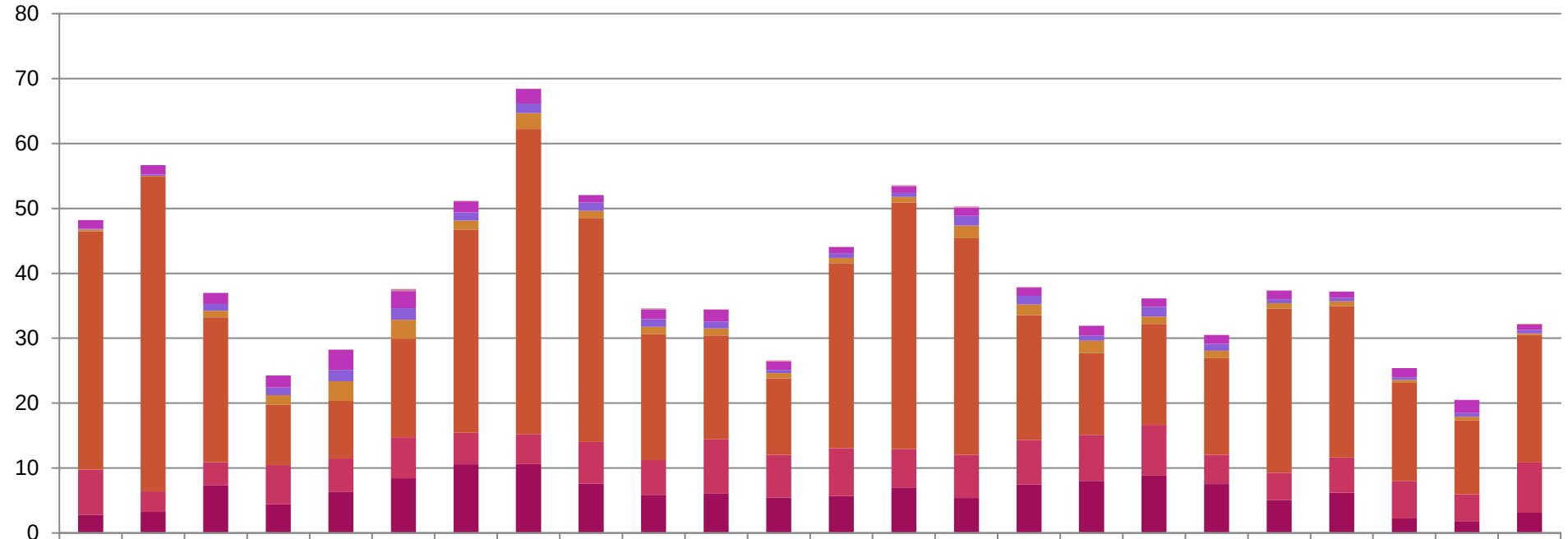
Implement slot coordination in Najaf during specific periods(done by Najaf OCC team).

- Implementing slot coordination in Najaf during specific periods is crucial for managing peak traffic periods effectively. The Najaf OCC team would play a pivotal role in this, ensuring that aircraft are allocated slots for arrivals and departures to avoid congestion.

Perform traffic analysis with traffic prediction.

- Regular traffic analysis on a daily, weekly, and monthly basis is essential for monitoring traffic patterns, identifying trends, and making informed decisions. This analysis helps in capacity planning and resource allocation.

Hourly Averages



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GA ARR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GA DEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIL OVF	1	1	2	2	3	3	2	2	1	1	2	1	1	1	1	1	2	1	1	1	1	1	2	1
MIL ARR	0	0	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
MIL DEP	0	0	1	2	3	3	1	2	1	1	1	1	1	1	2	2	2	1	1	1	1	0	1	0
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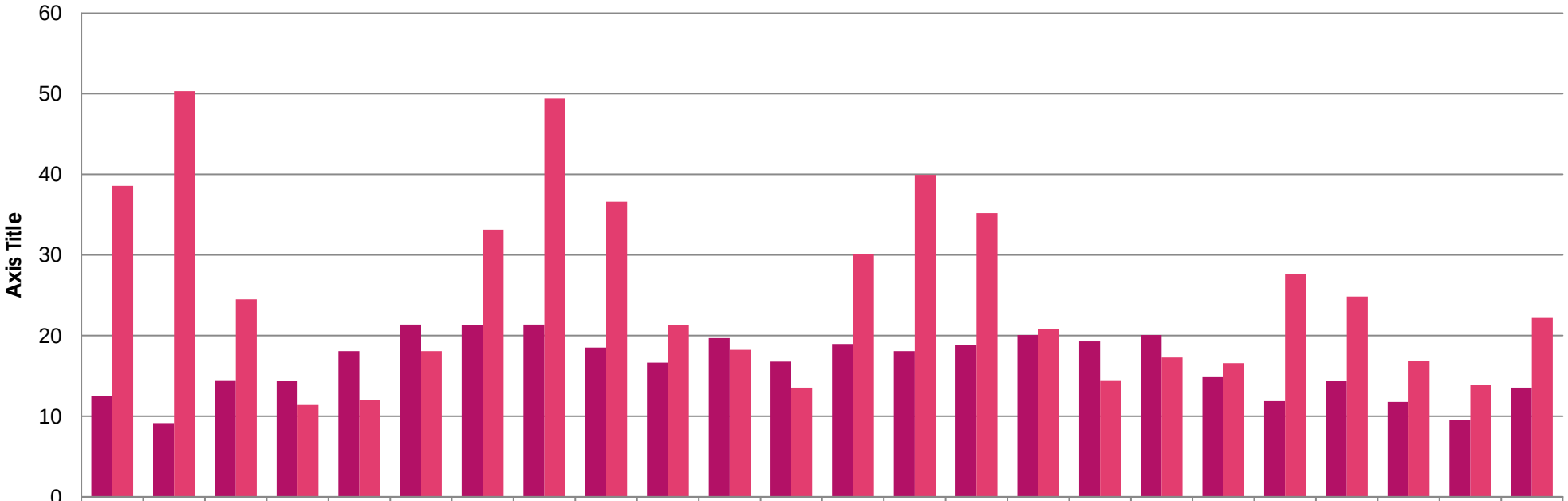
AC ARR	7	3	4	6	5	6	5	5	6	5	8	7	7	6	7	7	7	8	4	4	5	6	4	8
AC DEP	3	3	7	4	6	8	11	11	8	6	6	5	6	7	5	7	8	9	8	5	6	2	2	3

Weighted Average OVF/APP



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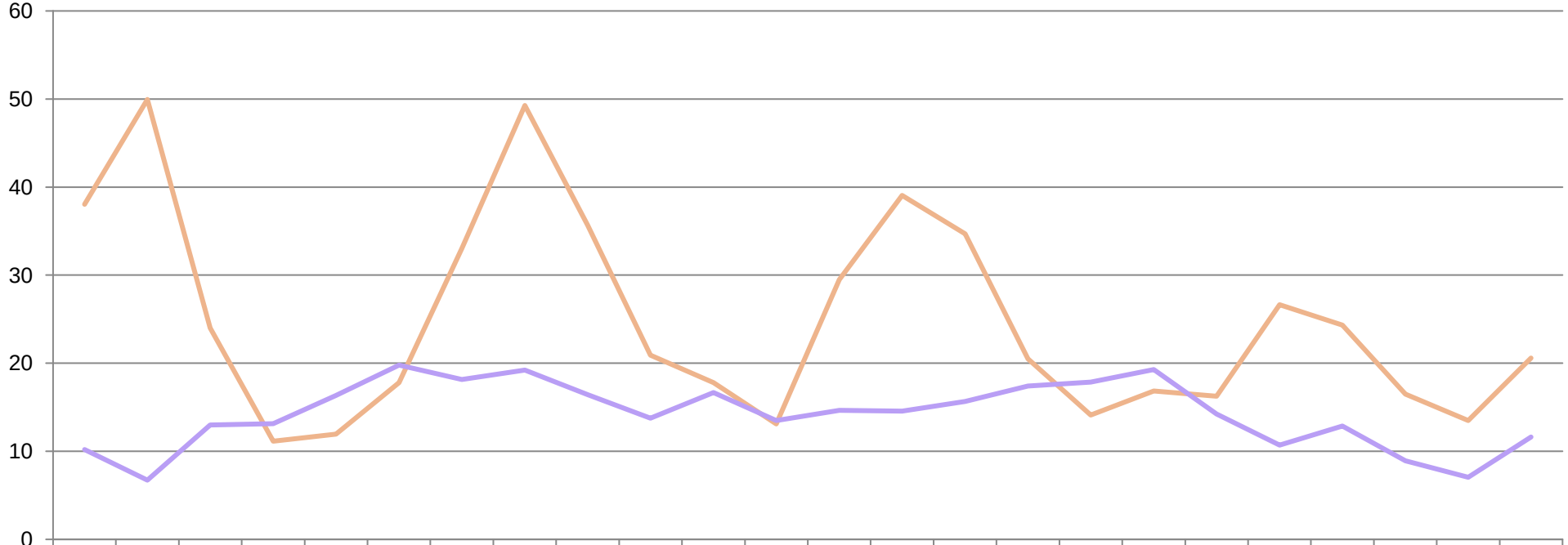

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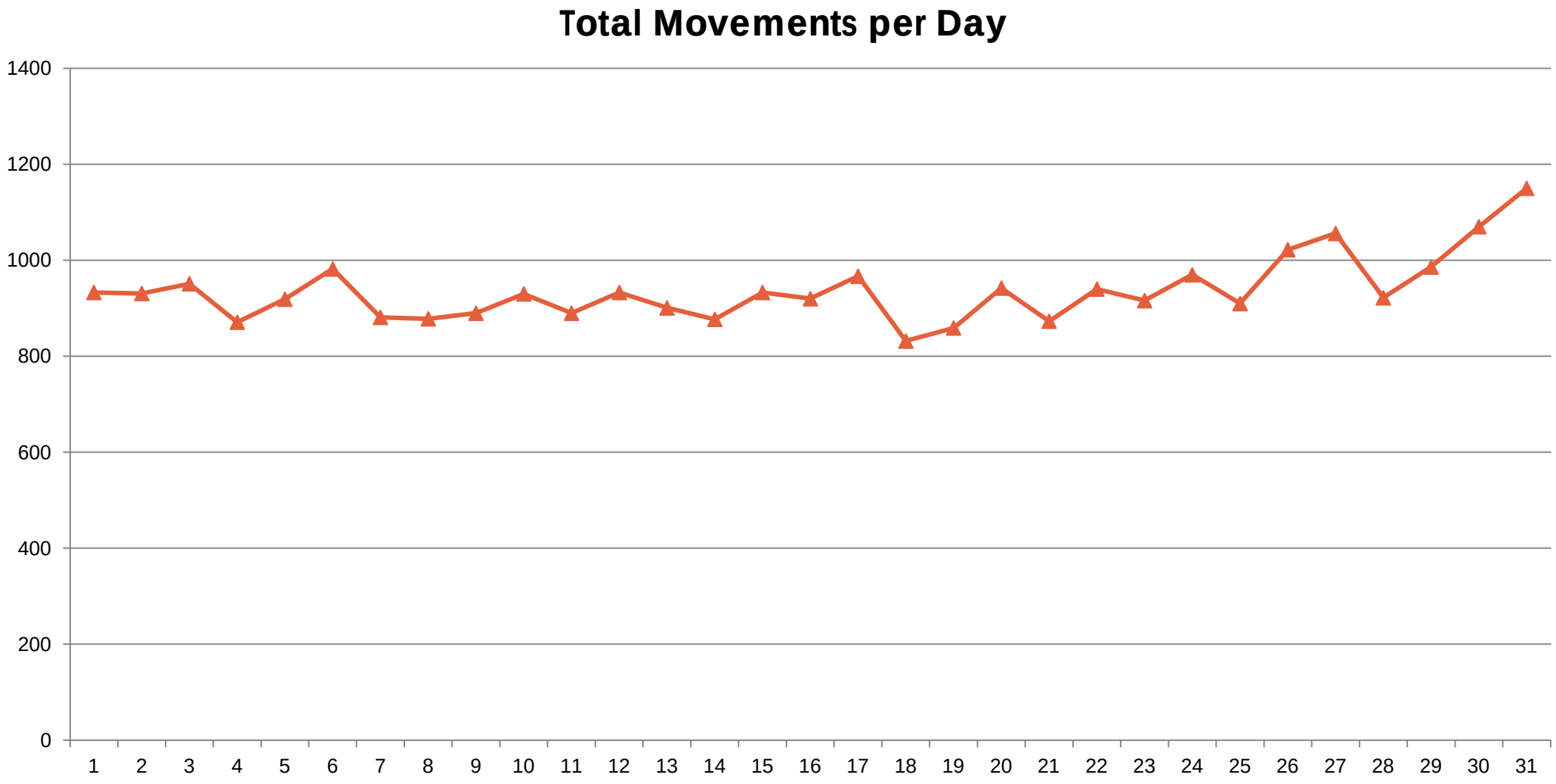
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1000
800
600
400
200
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2
3
4
5
6
7
8
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10
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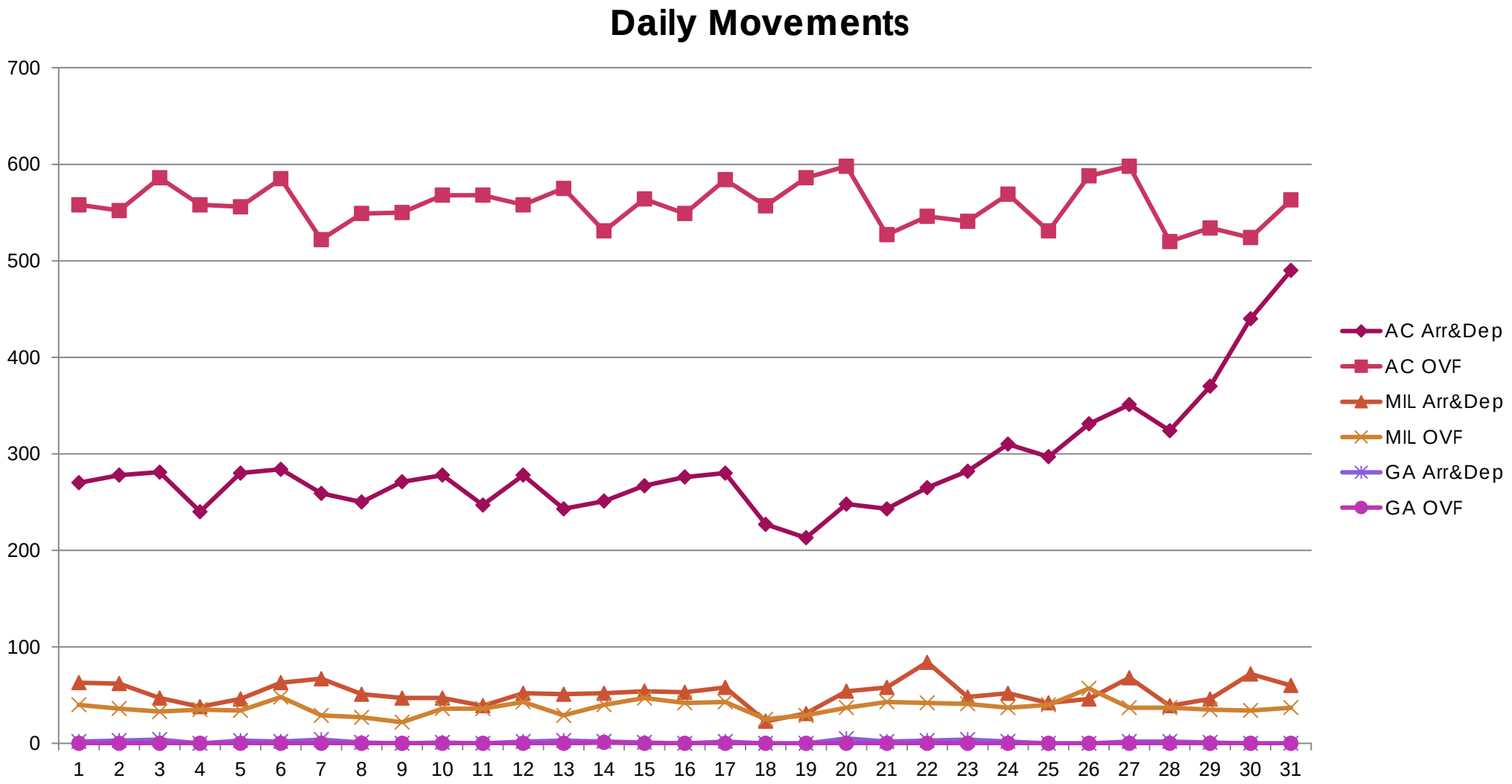
Daily Movements
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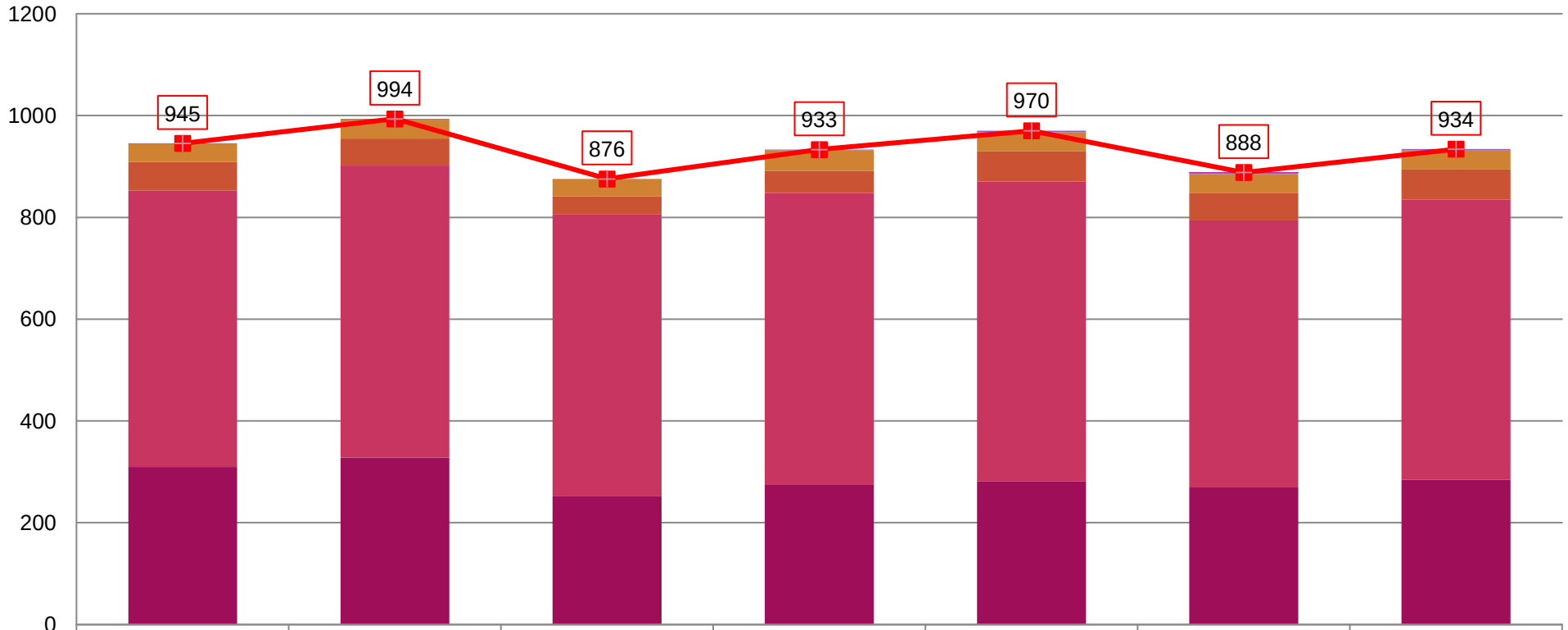
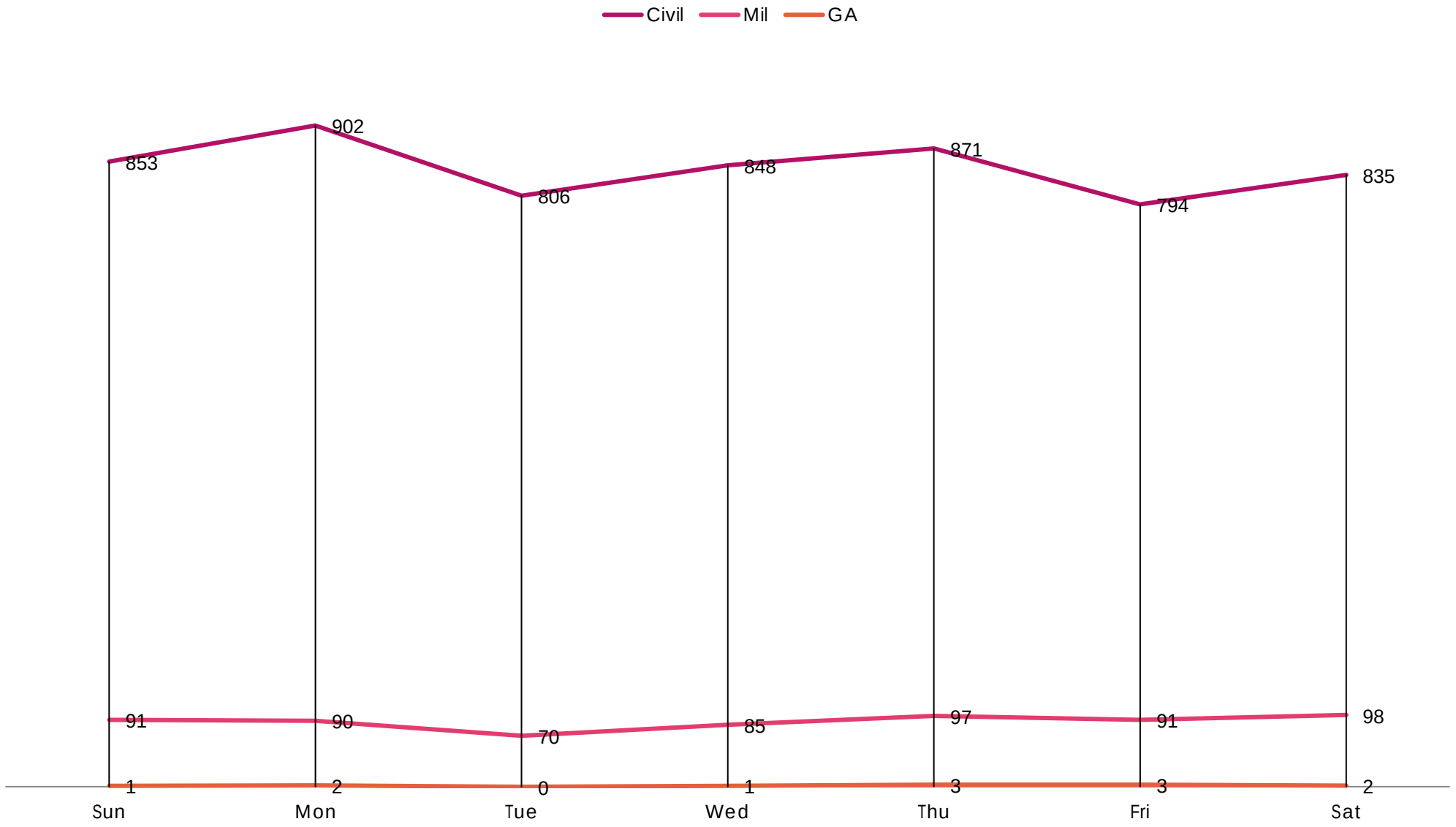
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
AC Arr&Dep
AC OVF
MIL Arr&Dep
MIL OVF
GA Arr&Dep
GA OVF

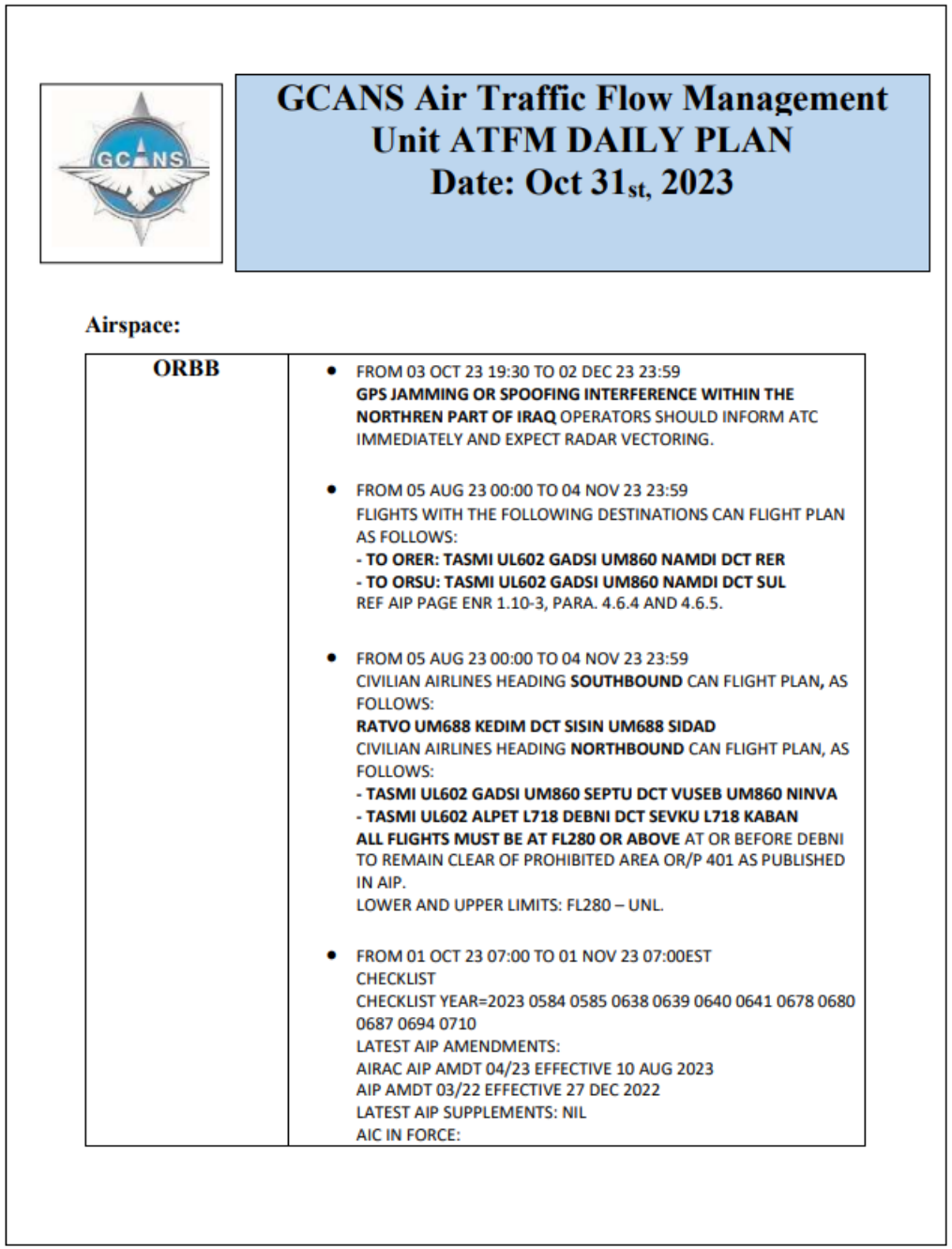
Daily Ave per day of the Week



	Sun	Mon	Tue	Wed	Thu	Fri	Sat
GA OVF	0	0	0	0	0	0	0
GA Arr&Dep	1	2	0	1	3	3	2
MIL OVF	35	37	34	41	38	37	38
MIL Arr&Dep	56	53	36	44	59	54	60
AC OVF	543	574	554	572	589	525	550
AC Arr&Dep	309	328	253	276	282	269	284
Total Ave	945	994	876	933	970	888	934

BACC Average Type of Flight per Weekday





GCANS Air Traffic Flow Management Unit ATFM DAILY PLAN
Date: Oct 31st, 2023

Airspace:

ORBB	• FROM 03 OCT 23 19:30 TO 02 DEC 23 23:59 **GPS JAMMING OR SPOOFING INTERFERENCE WITHIN THE NORTHREN PART OF IRAQ** OPERATORS SHOULD INFORM ATC IMMEDIATELY AND EXPECT RADAR VECTORING. • FROM 05 AUG 23 00:00 TO 04 NOV 23 23:59 FLIGHTS WITH THE FOLLOWING DESTINATIONS CAN FLIGHT PLAN AS FOLLOWS: **- TO ORER: TASMI UL602 GADSI UM860 NAMDI DCT RER** **- TO ORSU: TASMI UL602 GADSI UM860 NAMDI DCT SUL** REF AIP PAGE ENR 1.10-3, PARA. 4.6.4 AND 4.6.5. • FROM 05 AUG 23 00:00 TO 04 NOV 23 23:59 CIVILIAN AIRLINES HEADING **SOUTHBOUND** CAN FLIGHT PLAN, AS FOLLOWS: **RATVO UM688 KEDIM DCT SISIN UM688 SIDAD** CIVILIAN AIRLINES HEADING **NORTHBOUND** CAN FLIGHT PLAN, AS FOLLOWS: **- TASMI UL602 GADSI UM860 SEPTU DCT VUSEB UM860 NINVA** **- TASMI UL602 ALPET L718 DEBNI DCT SEVKU L718 KABAN** **ALL FLIGHTS MUST BE AT FL280 OR ABOVE** AT OR BEFORE DEBNI TO REMAIN CLEAR OF PROHIBITED AREA OR/P 401 AS PUBLISHED IN AIP. LOWER AND UPPER LIMITS: FL280 – UNL. • FROM 01 OCT 23 07:00 TO 01 NOV 23 07:00EST CHECKLIST CHECKLIST YEAR=2023 0584 0585 0638 0639 0640 0641 0678 0680 0687 0694 0710 LATEST AIP AMENDMENTS: AIRAC AIP AMDT 04/23 EFFECTIVE 10 AUG 2023 AIP AMDT 03/22 EFFECTIVE 27 DEC 2022 LATEST AIP SUPPLEMENTS: NIL AIC IN FORCE:

- **Send ATFM Daily Plan:** Distributing the ATFM daily plan to relevant stakeholders, including airlines and air traffic controllers, is crucial. This plan provides information on expected traffic flows, slots, and any restrictions or adjustments for the day.
- **ATFM Teleconference:**

Holding regular ATFM teleconferences on a monthly basis is a way to ensure effective communication and coordination among stakeholders. These meetings allow for the discussion of challenges, updates, and the sharing of important information.

Update LOA ATFM Section

- Liaising and updating Letters of Agreement (LOA) related to ATFM procedures and coordination with neighboring FIRs, such as Tehran FIR, Saudi Arabia (in progress) , is essential. This ensures that ATFM operations are harmonized across adjacent airspace.

GCANS NATIONAL ATFM plan (Draft).

- Creating a draft of the National Air Traffic Flow Management (ATFM) plan is necessary. This plan outlines the strategy and procedures for managing air traffic flow within the Baghdad FIR, including coordination with adjacent FIRs and regional authorities

Traffic Prediction Python Tool

- The Traffic Prediction Python Tool is a data-driven solution designed to forecast aviation traffic for specific hours, identify potential traffic peaks, and take into account various factors that influence air traffic. It integrates data from multiple sources, including historical aviation data, weather information, and event schedules, to make accurate predictions.

Traffic Prediction Python Tool (cont.)

Key Components:

- **Data Collection:** The system collects data from various sources, including civilian and military aviation records (arrival, departure, and overflight), weather data, and information about significant events that can impact aviation traffic.
- **Data Integration:** All collected data is centralized and cleaned, ensuring it is in a format suitable for analysis.
- **Data Analysis:** The system applies data analysis techniques to uncover patterns and relationships between aviation traffic and factors like weather conditions, events, and time of day

Traffic Prediction Python Tool (cont.)

- **Feature Engineering:** Relevant features are created to help the system understand and predict how events and weather conditions affect traffic. This involves categorizing events by their impact and creating seasonal and time-of-day features.
- **Machine Learning Models:** The system uses machine learning models to predict aviation traffic. These models are trained on historical data and take into account all the features created during the feature engineering stage.
- **Peak Identification:** Using the trained models, the system identifies peaks in aviation traffic. Peaks are determined based on deviations from the average traffic and the influence of various events and conditions.

Traffic Prediction Python Tool (cont.)

- **Real-time Updates:** To improve the accuracy of predictions, the system is updated with real-time data, especially for weather conditions and live event information.
- **Monitoring and Evaluation:** The system's performance is continually monitored and evaluated to enhance its accuracy over time. Feedback from aviation authorities and users is used to make necessary adjustments.
- **Scaling and Customization:** The system is designed to be scalable, covering multiple regions and airports. It can also be customized to meet specific requirements and accommodate various events.
- **Compliance and Security:** The system ensures compliance with aviation regulations and data security standards, especially when handling military aviation data.

Future upgrades

- **Alerting System:** An alerting system is integrated to notify relevant authorities when significant traffic peaks are predicted, particularly during major events or adverse weather conditions.
- **Visualization:** The system provides a user-friendly dashboard that displays predicted aviation traffic, highlighting peaks and the factors contributing to them. It also includes a calendar view that integrates major events and weather conditions.

Thank you for your attention, Any questions?