



ATFM – GCANS - IRAQ

AIR TRAFFIC FLOW MANAGEMENT IMPLEMENTATION WORKSHOP
(DOHA, QATAR, 6 – 7 FEBRUARY 2023)

outlines

- Baghdad FIR
- Sector capacity
- Statistics and data analysis
- FUA
- CDM

Baghdad FIR

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

ENROUTE CHART - ICAO

SLNC	Latitude	Longitude
ALPET	N011219	E0461844
ANBAR	N0320849	E0422453
ASNOT	N0333000	E0425717
BABL	N0323447	E0430436
BOXIX	N051724	E0480921
DAVAS	N051724	E0451235
DAXOG	N020512	E0393719
DAXOG	N054612	E0434528
DEBN	N031014	E0441703
DELM	N031918	E0431328
DENKI	N022228	E0455122
ELEXI	N044130	E0410900
ELODI	N020256	E0435126
EMDO	N064612	E0425454
GADSI	N003358	E0471116
GEPAP	N034906	E0422851
GBUX	N030500	E0411100
LMAP	N012133	E0485702
ITOVA	N031951	E0444129
KABAN	N037456	E0423859
KASIR	N023954	E0403112
KATUT	N033737	E0453439
KEDM	N064617	E0440909
KODAV	N014500	E0480400
LAGLO	N031539	E0441457
LONOR	N023839	E0450458
LOVEK	N022208	E0444001
MODIK	N032806	E0390100
MURIS	N011237	E0415036
MUTAG	N043003	E0433834
MUTAG	N021019	E0445703
NAMDI	N043027	E0444133
NINVA	N072100	E0431300
NSER	N093030	E0441825
NOLDO	N024932	E0452129
OTALO	N051700	E0441900
PAPUS	N025334	E0452707
PASIP	N030600	E0386600
PAXAT	N032056	E0460519
PUSHTO	N032100	E0424800
PUTSI	N033200	E0443700
RAGET	N033048	E0455348
RALTI	N014208	E0430001
RAPLU	N032300	E0414530
RATVO	N071426	E0435804
RESAK	N023305	E0451552
ROXOP	N064445	E0433322
RUKAM	N015008	E0431938
SEPTU	N031300	E0444400
SEVKU	N060548	E0431716
SIDNA	N092321	E0482944
SIDNA	N063358	E0414059
SIBI	N030200	E0422000
SILBO	N025900	E0432900
SINKA	N032137	E0444753
SIBIN	N025006	E0454113
SOBL	N043000	E0451008
SOGLUM	N041212	E0435454
SOLAT	N090942	E0463810
TAGLA	N022208	E0435000
TAGRU	N042959	E0440817
TASMI	N000120	E0475505
TOMSI	N054858	E0440229
TOTAM	N051601	E0444006
TUBEN	N051724	E0425434
ULDUR	N050623	E0472958
UMESA	N051741	E0434307
URCKO	N014735	E0452917
VAXEN	N031800	E0451500
VUSEB	N061637	E0434800

AIRSPACE CLASSIFICATION
 ANY: CLASS E BELOW FL 235
 CLASS A FROM FL 235 TO FL400
 CTR: CLASS D
 AIRSPACE: CLASS G BELOW FL 235 AND
 ABOVE FL400, OUTSIDE ARRY,
 CTR: AND TRM:
 CLASS A BTN FL235 AND FL400

- Notes:**
- ① ATS route B411, between MURIS and RUKAM, FL245 to FL285 not available due to OR/R 312.
 - ② ATS route G202, between MODIK and RAPLU, FL240 to FL260 not available due to OR/R 310.
 - ③ ATS route G282, between RAPLU and PUSHTO, FL245 to FL285 not available due to OR/R 312.
 - ④ ATS route L206, between PASIP and GBUX, FL240 to FL260 not available due to OR/R 310.
 - ⑤ ATS route L206, between GBUX and SILBO, FL245 to FL285 not available due to OR/R 312.
 - ⑥ ATS route L715, between GBUX and BABI, FL245 to FL285 not available due to OR/R 312.
 - ⑦ ATS route N703, between RUKAM and ANBAR, FL245 to FL285 not available due to OR/R 312.

LEGEND

○ AERODROME
 --- FIR BDY
CONTROL ZONE (CTR)
 --- APP SECTOR BDRY
 --- ACC SECTOR BDRY
 ○ LATERAL LIMITS
DIRECTION OF ROUTES
 --- REDIRECTIONAL
 --- EASTBOUND
 --- WESTBOUND
ROUTE LABEL
 --- ROUTE DESIGNATOR
 --- ROUTE SERVICE IN USE
 --- MINIMUM CROSSING LEVEL
SUSPENDED ROUTE SEGMENTS
 --- SUSPENDED
REPORTING POINT
 ▲ COMPULSORY
 ▲ ON REQUEST
 ▲ SUSPENDED
NAVAIDS
 ○ VOR
 ○ VOR COLLOCATED WITH DME
IDENTIFICATION FOR NAVAIDS
 NAME
 TYPE
 FREQUENCY
 MSL/AGL
 COORDINATES
ATS SECTOR BDRY
 --- APP SECTOR BDRY
 --- ACC SECTOR BDRY
FREQUENCIES OF TWR UNITS

Unit	Primary	Secondary
M Baghdad TWR	118.1 MHz	119.9 MHz
Basra/Tutay TWR	118.0 MHz	118.7 MHz
Basra TWR	118.0 MHz	118.4 MHz
Basra TWR	118.0 MHz	NIL
M Basra TWR	125.50 MHz	302.4 MHz
M Basra TWR	125.2 MHz	116.7 MHz
Basra/Baghdad TWR	121.2 MHz	116.3 MHz
Embassy Helipad TWR	125.100 MHz	300.750 MHz

CHANGES: Baghdad ACC north secondary frequency changed.

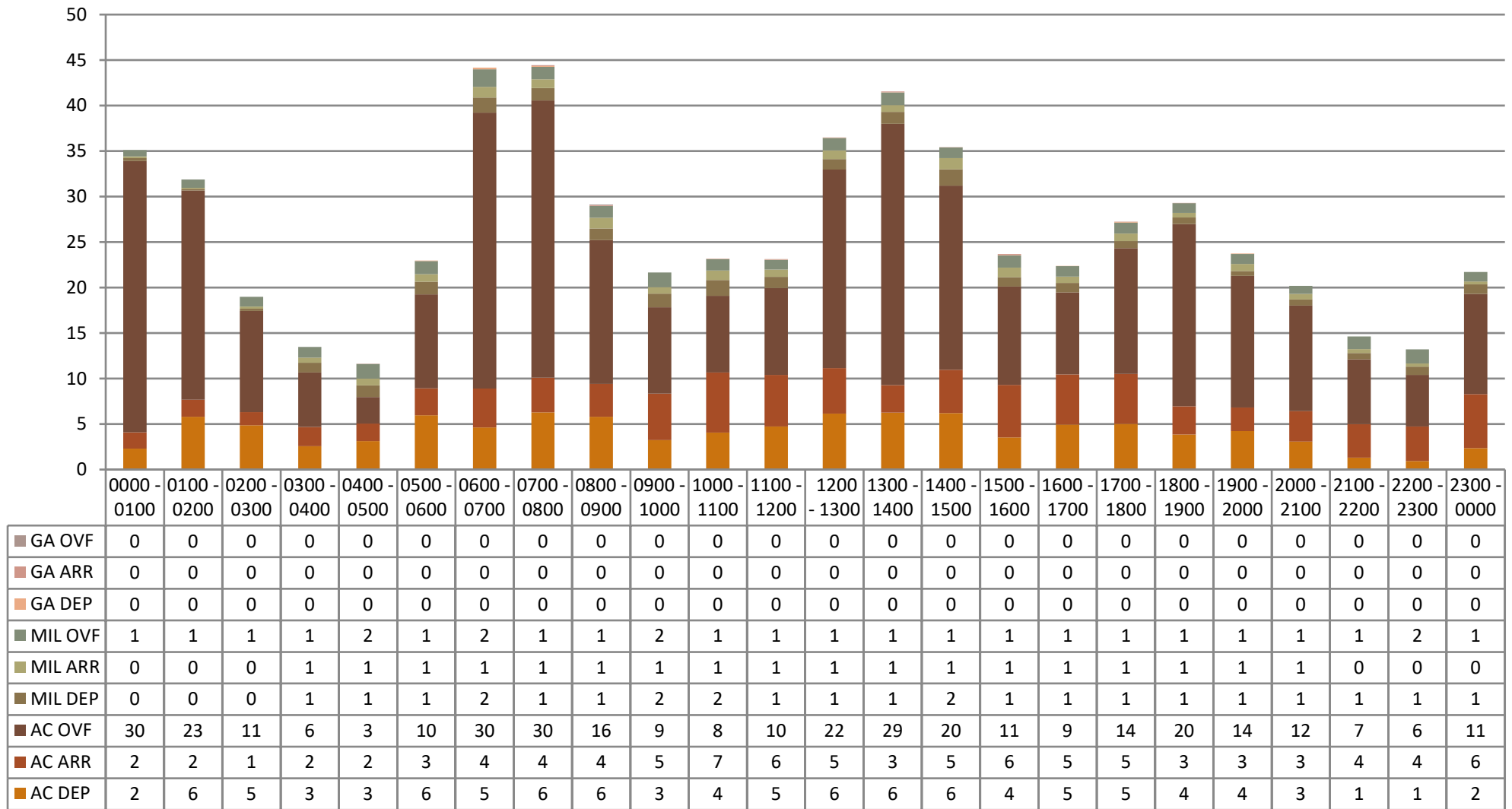
Sector capacity

$$\text{Dorata task equation } c = \frac{\phi * \delta}{\mu * T\mu * v\mu}$$

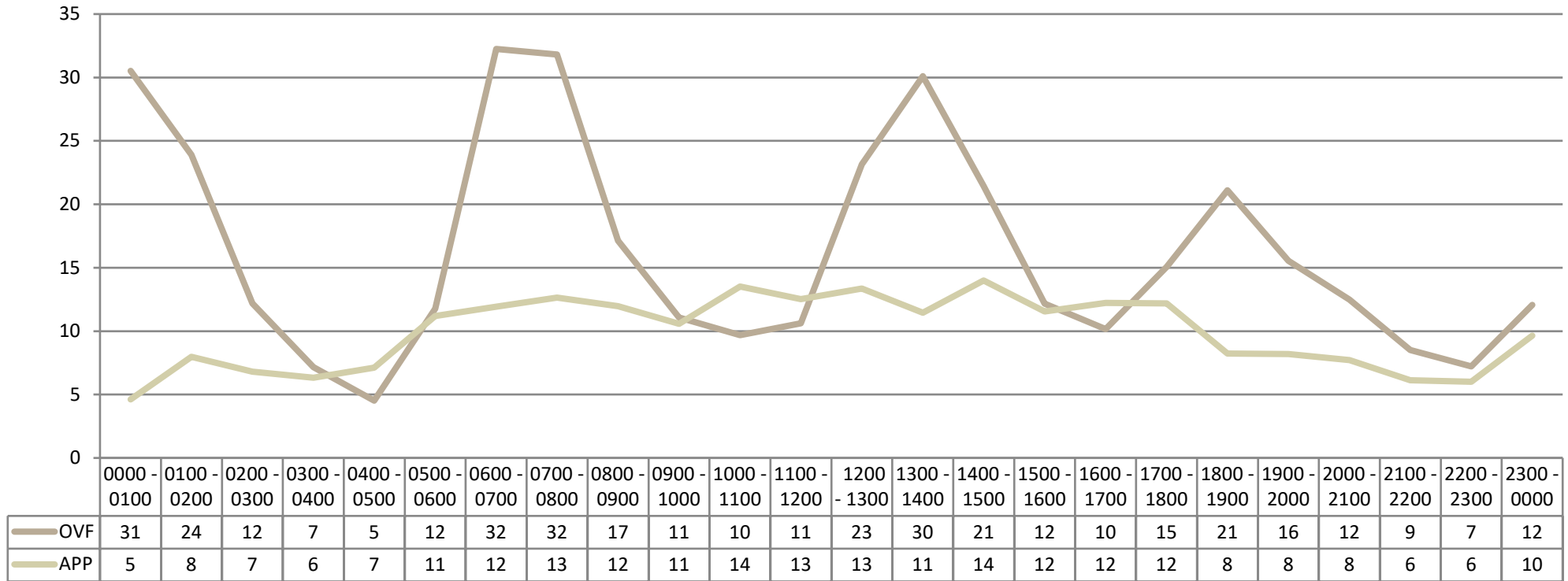
c	The number of aircraft that can be controlled simultaneously
ϕ	The ATCO availability factor.
δ	Average flight time of the aircraft in the sector
μ	number of communications for each aircraft in the sector
$T\mu$	mean duration of each message
$v\mu$	mean speed of aircraft within the sector

Sector capacity phases

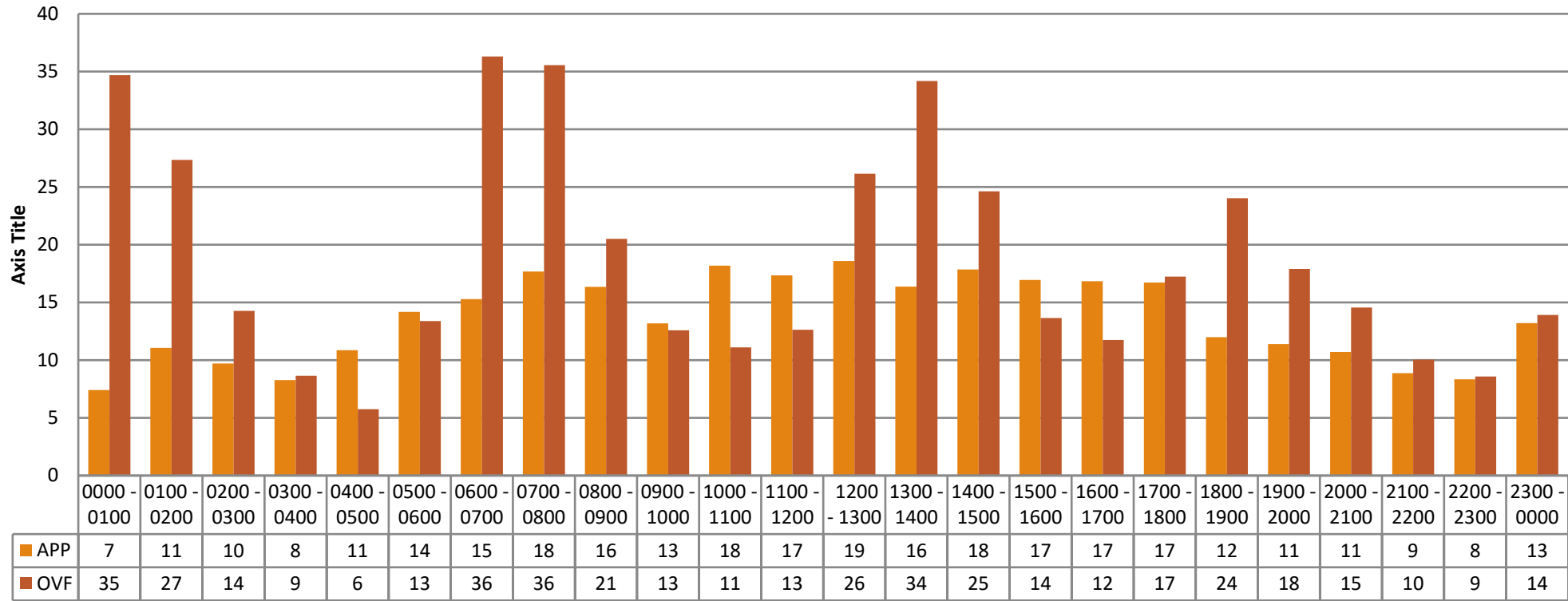
- 1. Data collection and analysis:** data are collected from real traffic during peak times of the year during events and under different circumstances.
- 2. Apply the equation:** extract the equation factors from the data analyzed in step 1.
- 3. Periodic assessment:** specify a specific time for assess the capacity number and adjust the number.



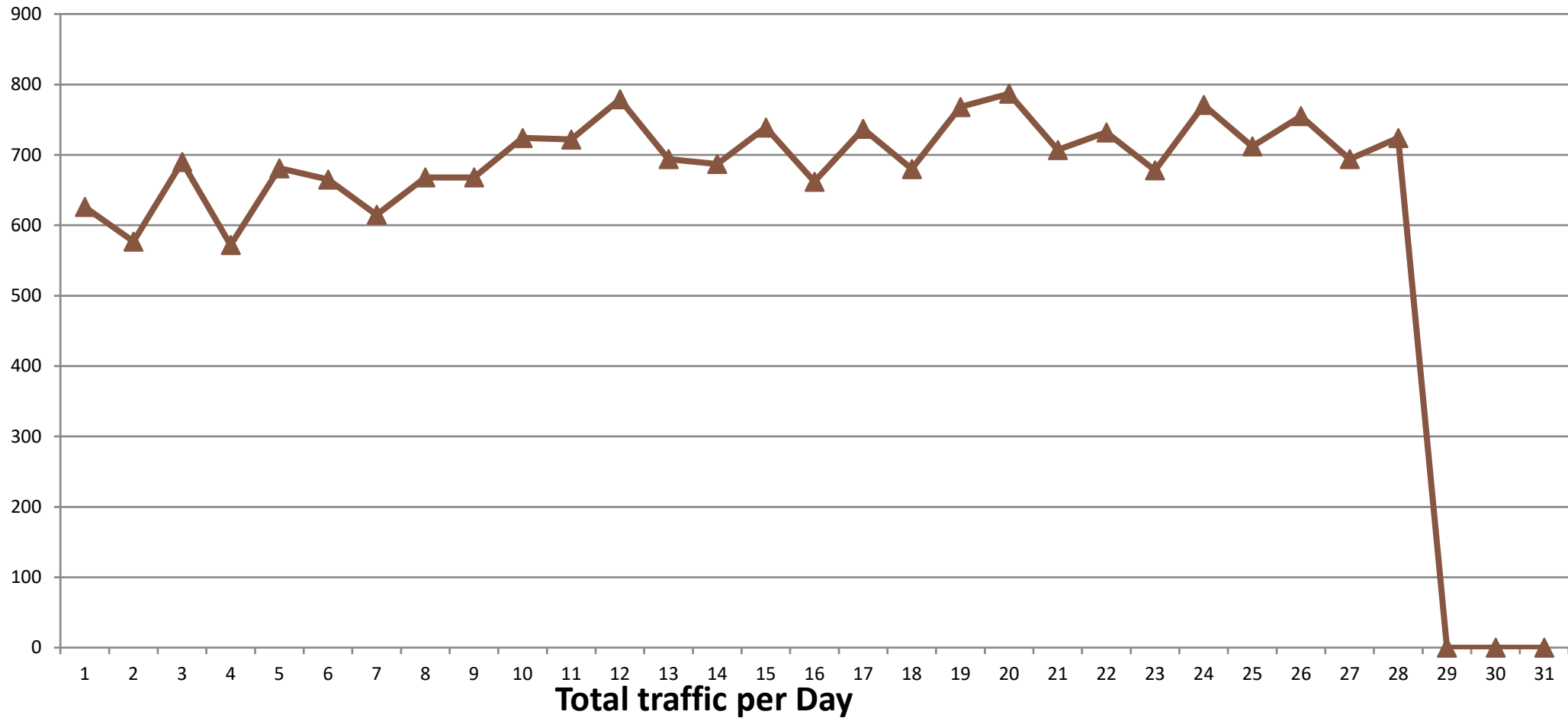
Hourly Average traffic
(numbers used are for demonstration purposes)



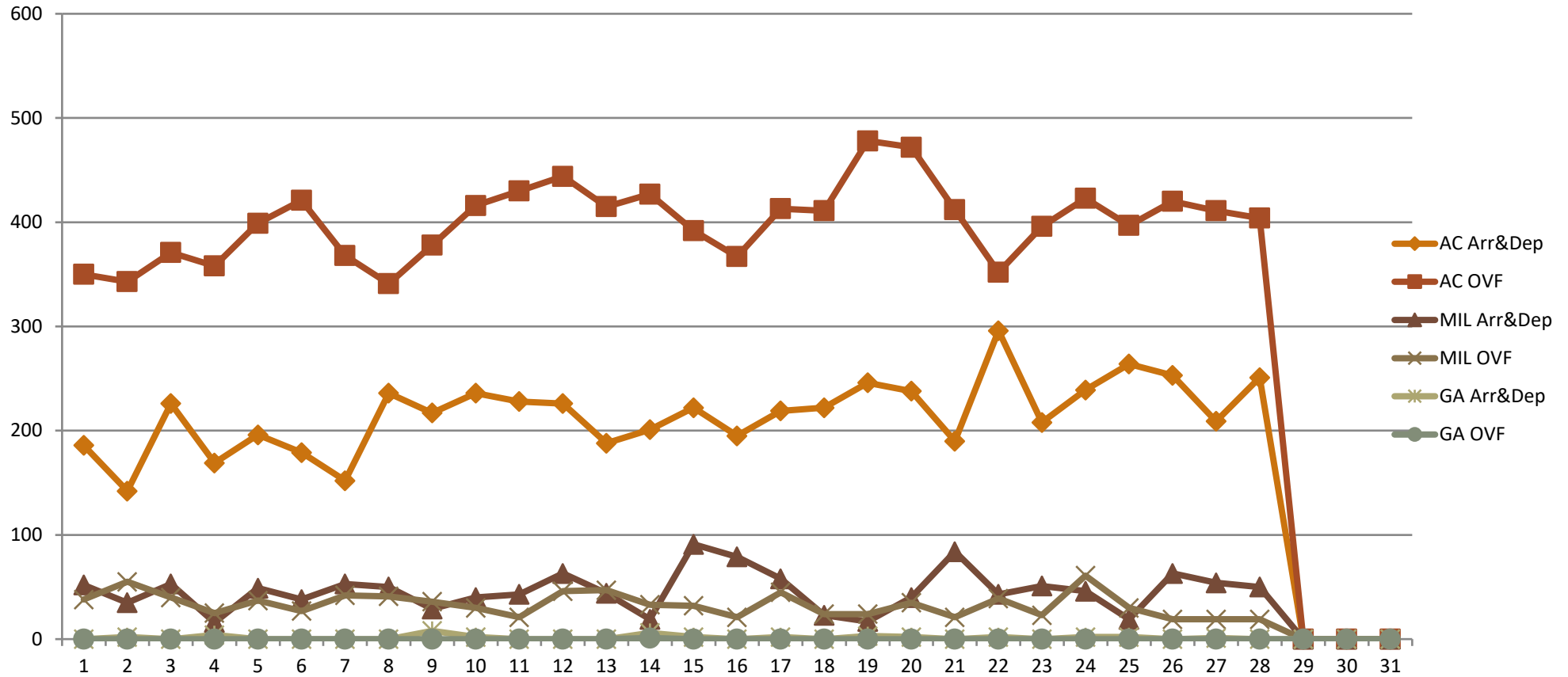
Hourly average overflying and approach traffic
(numbers used are for demonstration purposes)



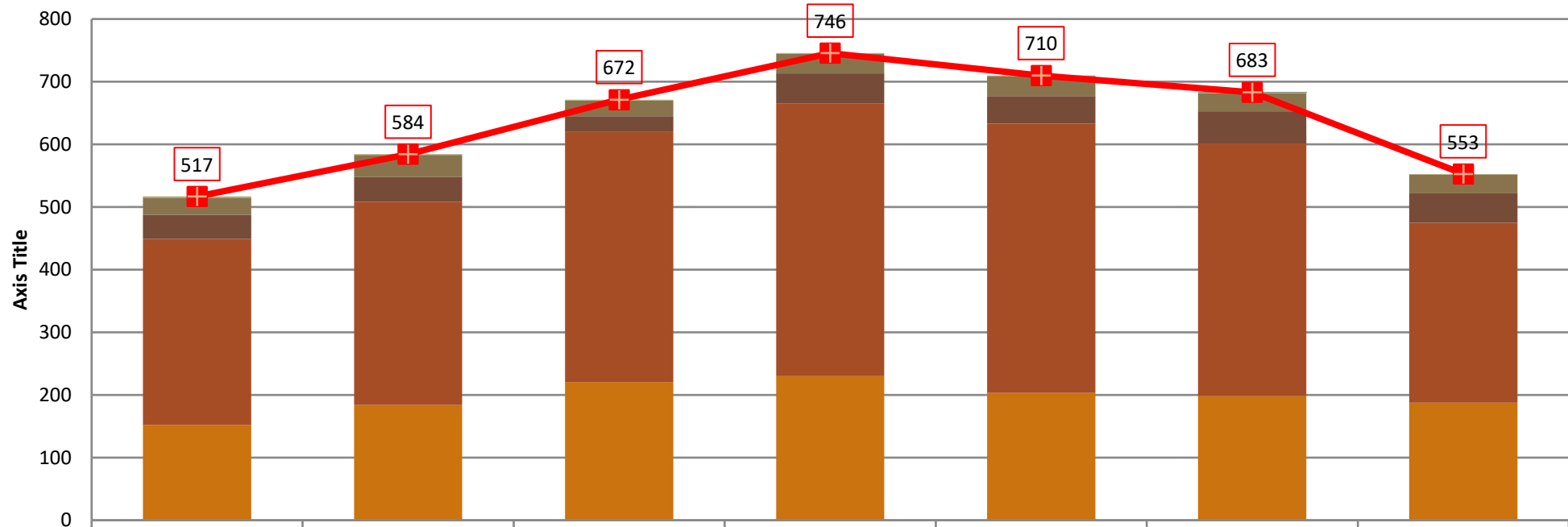
Average OVF/APP traffic
(numbers used are for demonstration purposes)



(numbers used are for demonstration purposes)

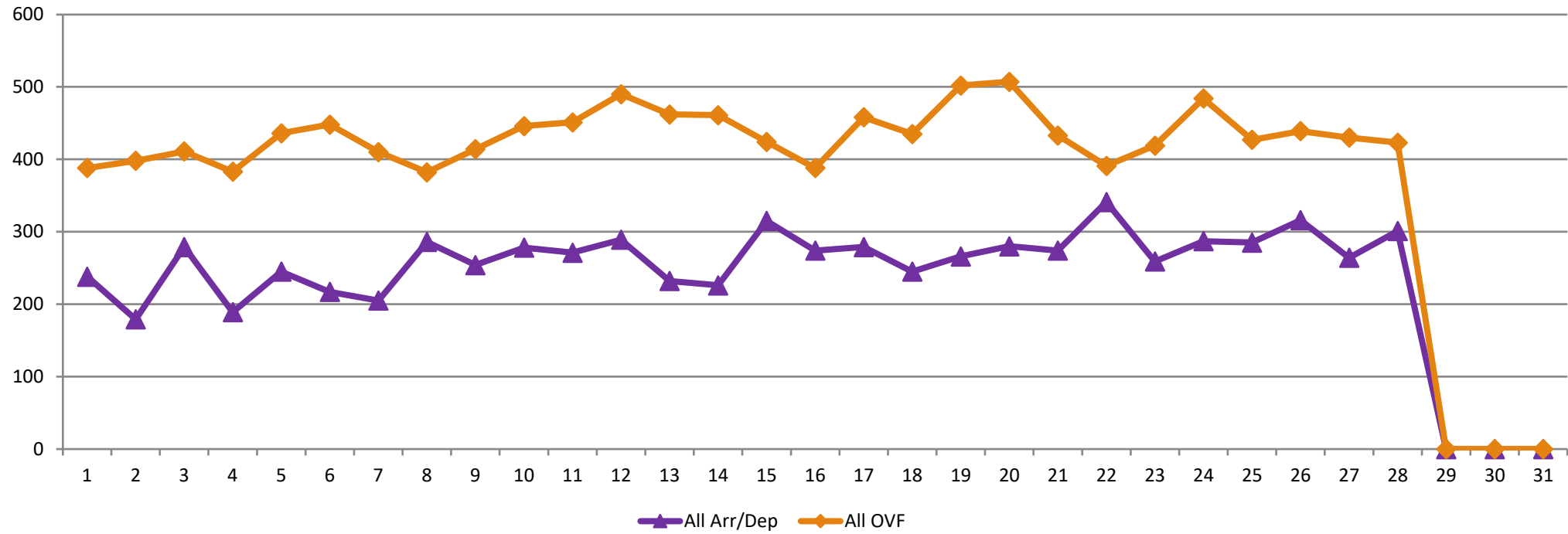


Daily Movements
 (numbers used are for demonstration purposes)

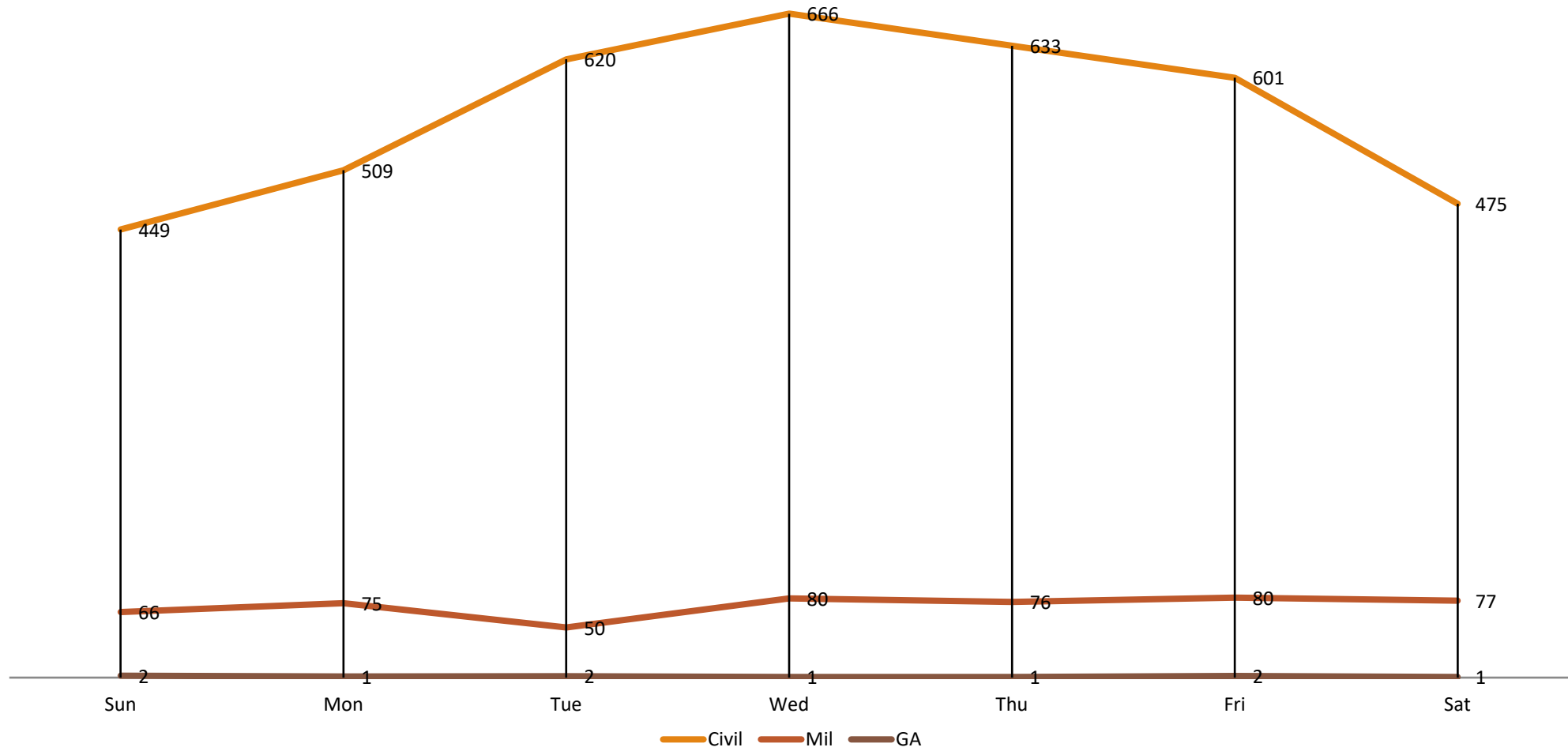


	Sun	Mon	Tue	Wed	Thu	Fri	Sat
GA OVF	0	0	0	0	0	0	0
GA Arr&Dep	2	1	2	1	1	2	1
MIL OVF	27	35	25	32	32	29	30
MIL Arr&Dep	39	39	25	48	44	52	47
AC OVF	297	325	399	435	430	403	287
AC Arr&Dep	152	184	221	230	204	199	188
Total Ave	517	584	672	746	710	683	553

Daily Average traffic per week
(numbers used are for demonstration purposes)



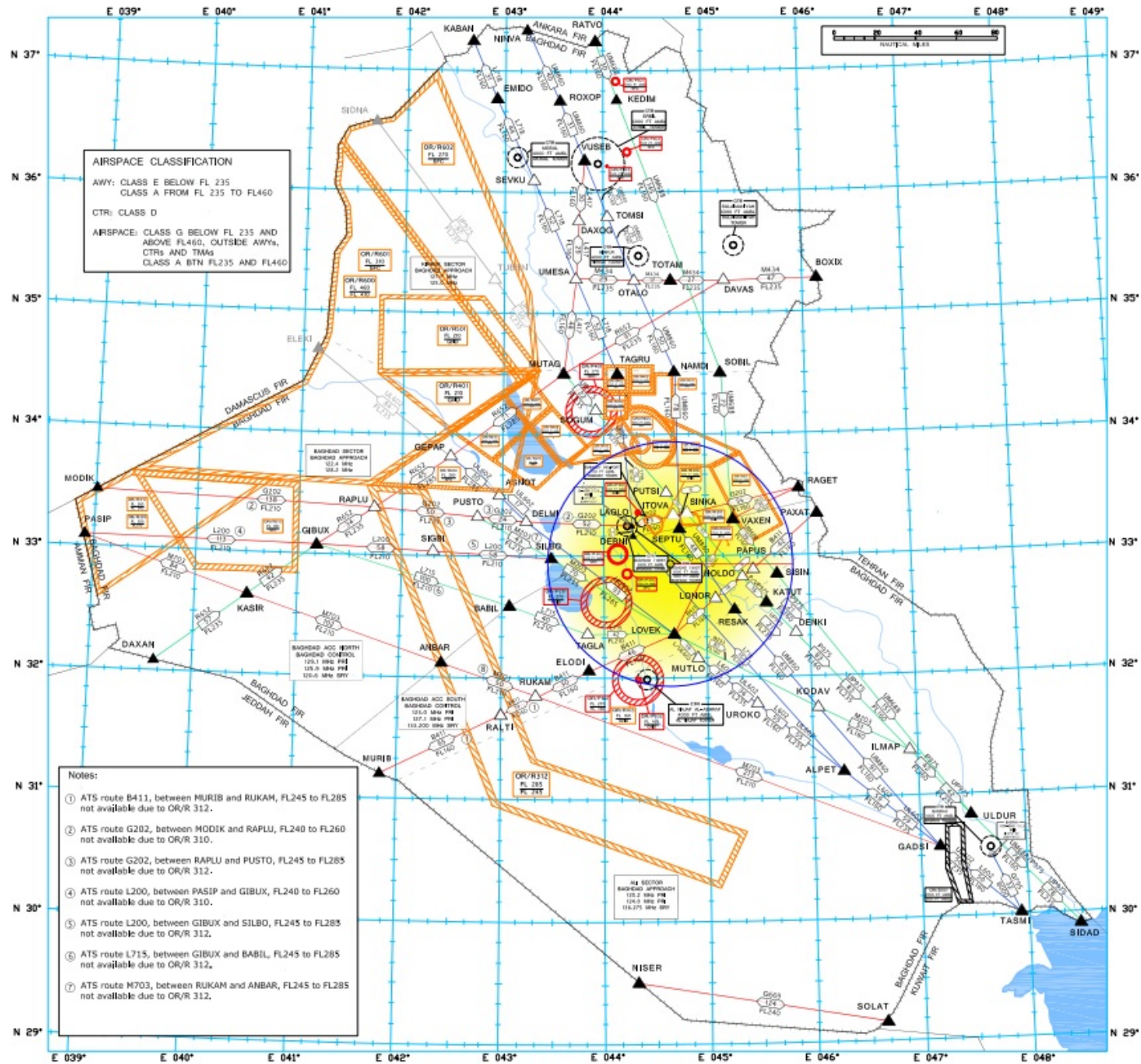
Combined movements OVF vs ARR/DEP
(numbers used are for demonstration purposes)



BACC Type of Flight per day
(numbers used are for demonstration purposes)

Flexible use of airspace (FUA)

- **Flexible Use of Airspace (FUA)** : Airspace is no longer designated as purely "civil" or "military" airspace, but considered as one continuum and allocated according to user requirements.
- High coordination with military side changing many dangerous and prohibited areas to be used upon request, reduce the levels of others dangerous and prohibited areas to the available.
- the FUA manual under written using the recommendations of ICAO 9750.
- ICAA need to regulate the FUA manual.



collaborative decision making(CDM)

Stakeholders should share accurate and up-to-date information in order to make more appropriate decisions. Air traffic managers should take all stakeholders requirements into consideration to further improve flight and airspace efficiency. Teleconferencing is a very effective way to do this and most ANSPs which have implemented ATFM have a process of teleconferencing.

collaborative decision making(CDM)

- 1. The ATFM Daily Plan:** The ATFM daily plan (ADP) establishes the process, structure, and responsibilities for developing, managing, and implementing a plan for air traffic operations in the region. The ADP is a plan for the management of the region's airspace. The ADP should be a collaborative process including all stakeholders.
 - Baghdad starts ATFM daily plan since december-2022
- 2. Use of ATFM CDM Teleconference:** The ANSP, based on its concept of operations, should decide if/when to conduct ATFM teleconferences.
 - Baghdad starts ATFM CDM Teleconference on monthly bases since January 2023

Thanks for listening