

MID ROC Implementation Plan

(27 August 2014)

1. **Objective**
2. **Steps to achieve the objective**
3. **Measure objective – identify gaps**
4. **Correct gaps**
5. **Continue monitoring/corrective process**

Objective

To develop a Regional OPMET Centre (ROC) in the MID Region in order to 1) assure required data listed in SADIS User Guide Annex 1 is routed to EUR (via ROC Vienna) which would assure global availability via SADIS (ROC Vienna – ROC London – SADIS); 2) eliminate multiple occurrences of OPMET data in various bulletins; 3) eliminate duplicate bulletins; 4) liaise with the EUR Region as well as other regions in due time to resolve OPMET data issues identified; and 5) develop ability to manage the exchange of OPMET data in digital form as per the concept of operations on the ICAO meteorological information exchange model (CONOPS on IWXXM) – to be developed in the next year.

Efficient exchange of OPMET data is necessary for flight planning and optimum use of alternate aerodromes that assist in reducing flight time, fuel expended, cost, and fuel emissions.

Steps to achieve the objective

FASID Table MET 2A for the MID Region is a subset of global OPMET requirements in SADIS User Guide Annex 1. To obtain the latest requirements, you may access the following website <http://www.icao.int/safety/meteorology/Documents/FASID%20Table%20MET%20A%20-%20SUG%20Annex%201%20-%20Complete.pdf> and search for MET 2A – MID (please note that there will be a correction to the entry for Hamad International (OTHH) in Qatar which will include Y in the METAR/SPECI column and Juba (HSSJ) is still in the MID plan until the FIR is developed for South Sudan). OPMET required in the MID Region is provided in **Appendix MID OPMET requirements**, which was last updated 28 April 2014.

The OPMET data listed in the referenced table should be available globally. Each State in the MID Region should assure that their OPMET data listed in MID FASID Table MET 2A be sent to Jeddah (address) and Bahrain (address) using the bulletin numbering convention described in **Appendix Bulletin Numbering**. This would then be sent to ROC Vienna who then sends to ROC London which serves as a link to the global distribution of OPMET data via SADIS.

To begin this implementation of routing to Jeddah the following plan is suggested:

State	Implement routing date (to be decided when Agenda Item 8 is reviewed)	Implementation actions	Status

Bahrain		see Appendix Bahrain	
Egypt		see Appendix Egypt	
Iran		see Appendix Iran	
Iraq		see Appendix Iraq	
Jordan		see Appendix Jordan	
Kuwait		See Appendix Kuwait	
Lebanon		see Appendix Lebanon	
Libya		see Appendix Libya	
Oman		See Appendix Oman	
Qatar		see Appendix Qatar	
Saudi Arabia		see Appendix Saudi Arabia	
Sudan		see Appendix Sudan	
Syrian Arab Republic		see Appendix Syria	
United Arab Emirates		see Appendix UAE	
Yemen		see Appendix Yemen	

In addition, each State will be asked what OPMET data it needs for distribution from the ROC to the State via its' National OPMET Centre (NOC). This will be done in the form of a survey provided at the workshop. ROCs will maintain routing tables for dissemination of needed data to the States within its Area of Responsibility (AoR). To assist this effort, a survey is provided to list routine, scheduled OPMET bulletins (e.g. SA, SP, FT, FC) a State produces and receives as well as a list of non-routine, non-scheduled OPMET bulletins (e.g. WS, WC, WV, WA, FA, FV, FK, UA, NO) a State produces and receives. This is provided in the **Appendix Survey on Bulletins Produced and Received by States**.

Measure Objective – identify gaps

Taking advantage of the monitoring period in February 2015 of OPMET data required to be received at ROC Vienna, gaps may be identified in having required OPMET data as per SADIS User Guide Annex 1 for the MID Region. In addition, duplicate bulletins and multiple OPMET occurrences still may be identified.

Correct gaps

Based on this new list of OPMET issues, the ROC would be expected to communicate with States in coordination with ICAO on remedying these gaps. This could be reviewed in April/May 2015 (side meeting with MIDANPIRG/15).

Continue monitoring/corrective process

By mid-2015, the new ROC in Saudi Arabia would have minimized many OPMET issues and will continue to have changes, but likely less and less based on periodic monitoring necessary in identifying and correcting gaps.

Eventually, the focus would then be on implementing the ability to exchange OPMET data (METAR and SPECI, TAF and SIGMET) in digital form in accordance to the concept of operations on the ICAO

meteorological exchange data model (CONOPS on IWXXM) that is being developed in part by the EUR DMG.

Continued coordination with EUR DMG would be expected, at least once per year.

Appendix Bulletin Numbering

Recommended Use of ii in WMO Abbreviated Header Line

ii	use
01-19, 20-39	Global, regional and inter-regional distribution (FASID)
40-89	<p>National and bilateral distribution</p> <p><i>Noting GAMET using series 50-59 should be distributed to regional OPMET databanks</i></p> <p><i>Noting special air-reports using series 60-69 and special air-reports for volcanic ash using series 70-79 should be distributed to regional OPMET databanks and distributed globally</i></p>
90-99	Reserved

Appendix Bahrain

-Send OPMET for OBBI as per MID OPMET requirements (FASID Table MET 2A) for Bahrain compiled in bulletin with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-Eliminate multiple OPMET occurrences:

Stop compiling METAR and/or TAF for Kuwait, Oman, Saudi Arabia, Qatar and UAE (or do we not want to do this since Bahrain will be a backup)

Remove

- OEDF from FTBN31 OBBI
- OEDF from SABN31 OBBI
- OEDR from FTBN31 OBBI
- OEDR from SABN31 OBBI
- OEJN from SABN31 OBBI
- OERK from SABN31 OBBI
- OKBK from SABN31 OBBI
- OMAA from FTBN32 OBBI
- OMAA from SABN32 OBBI
- OMAD from FTBN32 OBBI
- OMAD from SABN32 OBBI
- OMAL from FTBN32 OBBI
- OMAL from SABN32 OBBI
- OMDB from FTBN32 OBBI
- OMDB from SABN32 OBBI
- OMDW from FTBN32 OBBI
- OMDW from SABN32 OBBI
- OMFJ from FTBN32 OBBI
- OMFJ from SABN32 OBBI
- OMRK from SABN32 OBBI
- OMRK from FTBN32 OBBI
- OMSJ from FTBN32 OBBI
- OMSJ from SABN32 OBBI
- OOMS from FTBN32 OBBI
- OOSA from FTBN32 OBBI
- OTBD from FTBN31 OBBI
- OTBD from SABN31 OBBI
- OTHH from FTBN31 OBBI

Appendix Egypt

-Send OPMET for HEAL (**confirm no OPMET provided for HEAL**), *HEBL*, HEAX, HESN, HEAT, *HEBA*, HECA, *HEAR*, HEGN, HELX, HEMA, *HEMM*, *HEPS*, HEOW, HESH, HESG (**confirm no OPMET provided for HESG**), HESC, HETB as per MID OPMET requirements (FASID Table MET 2A) for Egypt compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain (*italics non-AOP aerodrome*)

-SADISOPSG/19 – missing METARS for *HEBL*, HEOW, HETB

-SADISOPSG/19 – missing TAF for HEOW

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-Eliminate multiple OPMET occurrences

Remove

- HEGN in SAEG31 HECA
- HELX in SAEG31 HECA
- HEPS in SAEG31 HECA
- HESH in SAEG31 HECA
- HESN in SAEG31 HECA

-Eliminate multiple OPMET bulletins

Remove

- FTAF39 HECA (from HEAX)
- FTAF39 HECA (from HECA)
- SAAF32 HECA (from HECA)
- FTAF39 HECA (from HELX)
- SAAF32 HECA (from HELX)

-At present there are two SA bulletins received:

SAEG31 HECA is produced half-hourly and at the full hour there are all SA-reports included(17), at HH+30 there is only HECA include

The second bulletin is SAEG32 HECA which is produced hourly and holds all SA-reports but HECA (16).

- Suggested change: SAEG31 HECA should only be produced for HECA, all other reports, which are issued hourly, should only be in the other bulletin. If any airport changes to half-hourly production, the report could be moved to the 31 bulletin.

Appendix Iran

-Send OPMET for *OIAA*, *OIKB*, *OIFM*, *OIMM*, *OISS*, *OITT*, *OIIE*, *OIII*, *OITR*, and *OIZH* as per MID OPMET requirements (FASID Table MET 2A) for Iran compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-Eliminate multiple OPMET occurrences:

Stop compiling METAR for Afghanistan

Remove

- OAKB in SAIR32 OIII

Appendix Iraq

-Send OPMET for ORNI, ORBI, ORMM, ORER, ORBM and ORSU as per MID OPMET requirements (FASID Table MET 2A) for Iraq compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-SADISOPSG/19 – missing METAR for ORSU (verify latest availability of OPMET for Iraq from ROC Vienna)

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix Jordan

-Send OPMET for OJAM, OJAI, and OJAQ as per MID OPMET requirements (FASID Table MET 2A) for Jordan compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix Kuwait

-Send OPMET for OKBK as per MID OPMET requirements (FASID Table MET 2A) for Kuwait compiled in bulletin with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-Create a TAF bulletin for international exchange for OKBK

-Regularly send SAKW20 OKBK

Appendix Lebanon

-Send OPMET for OLBA as per MID OPMET requirements (FASID Table MET 2A) for Lebanon compiled in bulletin with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-Eliminate duplicate bulletins

Beirut should stop sending the following bulletins

- FTAE31 VTBB
- FTAE32 VTBB
- FTAE33 VTBB
- FTAE34 VTBB
- FTAR20 OEJD
- FTBN31 OBBI
- FTBN32 OBBI
- FTHK31 VHHH
- FTIN31 VABB
- FTIN32 VABB
- FTIQ01 ORBI
- FTIR31 OIII
- FTIR32 OIII
- FTIR33 OIII
- FTJP31 RJTD
- FTJP32 RJTD
- FTPK31 OPKC
- FTSD22 OEJD
- FTSD31 OEJD
- FTSD40 OEJD
- FTSR31 WSSS
- FTSR32 WSSS
- FTSR33 WSSS
- SABN31 OBBI
- SABN32 OBBI
- SAIQ01 ORBI
- SASD20 OEJD
- SASD31 OEJD
- SASD32 OEJD

-Eliminate multiple OPMET occurrences:

Stop compiling METAR and/or TAF for Jordan and Syria

Remove

- OJAI from FTME31 OLBA
- OJAI from SAME31 OLBA
- OJAM from FTME31 OLBA
- OJAQ from FTME31 OLBA
- OLBA from FTME31 OLBA
- OSDI from FTME31 OLBA
- OSLK from FTME31 OLBA

Appendix Libya

-Send OPMET for HLLB, *HLKF*, HLLS, *HLLM*, HLLT as per MID OPMET requirements (FASID Table MET 2A) for Libya compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-SADISOPSG/19 – missing METAR for HLLS

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix Oman

-Send OPMET for OOMS and OOSA as per MID OPMET requirements (FASID Table MET 2A) for Oman compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-create SA bulletin for international exchange for OOMS

-create SA bulletin for international exchange for OOSA

Appendix Qatar

-Send OPMET for OTBD and OTHH as per MID OPMET requirements (FASID Table MET 2A) for Qatar compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-emphasis was placed on having OPMET from OTHH available globally as requested by jet airways in India through the ICAO APAC RO.

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix Saudi Arabia

-Send OPMET for *OEAB, OEBA, OESK, OEPA, OERR, OEBH, OEDF, OEGS, OEGT, OEHL, OEGN, OEJN, OEJB, OEMA, OENG, OERF, OERK, OESH, OETB, OETF, OETR, OEWD, OEWJ, and OEYN* as per MID OPMET requirements (FASID Table MET 2A) for Saudi Arabia compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-SADISOPSG/19 – missing METAR for *OEJB*

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

(e.g FTSD40 OEJD should not be sent to ROC Jeddah or ROC Bahrain)

-Eliminate duplicate bulletins

Remove

- FTBN32 OEJD
- Either FCSD32 OEJD or FCSD23 OEJD

-Eliminate multiple OPMET occurrences (Jeddah stop compiling METAR and/or TAF for Bahrain, Egypt, Jordan, Kuwait, Lebanon, Qatar, UAE and Yemen):

Remove

- HECA from FTAF32 OEJD
- HELX from FTAF32 OEJD
- OBBI from FTAR20 OEJD
- OBBI from SAAR20 OEJD
- OEDF from SASD20 OEJD
- OEDR from SASD20 OEJD
- OEJN from SASD20 OEJD
- OEMA from SASD20 OEJD
- OERK from SASD20 OEJD
- OETF from SASD20 OEJD
- OJAI from FTME31 OEJD
- OJAM from FTME31 OEJD
- OJAQ from FTME31 OEJD
- OLBA from FTME31 OEJD
- OMMA from FTAR20 OEJD
- OMAA from SAAR20 OEJD
- OMAD from FTAR20 OEJD
- OMAD from SAAR20 OEJD
- OMAL from SAAR20 OEJD

- OMAD from FTAR20 OEJD
- OMDB from FTAR20 OEJD
- OMDB from SAAR20 OEJD
- OMFJ from SAAR20 OEJD
- OMRK from FTAR20 OEJD
- OMRK from SAAR20 OEJD
- OMSJ from FTAR20 OEJD
- OMSJ from SAAR20 OEJD
- OOMS from FTAR20 OEJD
- OOSA from FTAR20 OEJD
- OTBD from FTAR20 OEJD
- OTBD from SAAR20 OEJD
- OYAA from SASD31 OEJD
- OYAA from SAAR20 OEJD

Jeddah should stop sending the following bulletins

- SAME31 OLBA

Appendix Sudan

-Send OPMET for HSKA, HSSS, *HSOB*, HSPN, and HSSJ (Juba is in South Sudan however is still currently in the MID RANP until the FIR in South SUDAN has been established) as per MID OPMET requirements (FASID Table MET 2A) for Sudan compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-SADISOPSG/19 – missing METARs for HSKA, HSPN

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix Syria

-Send OPMET for OSAP, OSLK, and OSDI as per MID OPMET requirements (FASID Table MET 2A) for Syria compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-SADISOPSG/19 – missing METAR for OSAP

-SADISOPSG/19 – missing TAF for OSAP (check with ROC Vienna on status of OPMET for OSAP, OSLK and OSDI)

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix UAE

-Send OPMET for OMAA, OMAL, OMDB, OMDW, OMFJ, OMRK, and OMSJ as per MID OPMET requirements (FASID Table MET 2A) for UAE compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

Appendix Yemen

-Send OPMET for OYAA, OYHD, OYRN, OYSN, OYSY and OYTZ as per MID OPMET requirements (FASID Table MET 2A) for Yemen compiled in bulletin(s) with bulletin numbers ranging from 01-39 to Jeddah and Bahrain

-SADISOPSG/19 – missing TAF for OYHD, OYRN, OYSY, OYTZ

-OPMET data not required (not in FASID Table MET 2A) should be compiled in bulletin(s) with numbers ranging from 40-49 and not sent to ROC Jeddah or ROC Bahrain

-create FT bulletin for international exchange for OYAA

-create FT bulletin for international exchange for OYSN

-Eliminate multiple OPMET occurrences:

Remove:

- SAYE20 OYAA
- SAYE20 OYAT
- SAYE20 OYGD
- SAYE20 OYHD
- SAYE20 OYIB
- SAYE20 OYMB
- SAYE20 OYRN
- SAYE20 OYSD
- SAYE20 OYSN
- SAYE20 OYSY

Survey on bulletins produced & received by State

Please list routine, scheduled OPMET bulletins (e.g. SA, SP, FT, FC) your State **produces**?

OPMET bulletin type	Specific bulletins
SA (METAR)	e.g. SABN31 OBBI;
SP (SPECI)	
FT (TAF 12 hours or greater)	
FC (TAF less than 12 hours)	

Please list non-routine, non-scheduled OPMET bulletins (e.g. WS, WC, WV, WA, FA, FV, FK, UA, NO) your State **produces**?

OPMET bulletin type	Specific bulletins
WS (SIGMET)	e.g. WSBN21 OBBI;
WC (SIGMET on tropical cyclone)	
WV (SIGMET on volcanic ash)	
WA (AIRMET) – <i>not required in MID</i>	
FA (GAMET) – <i>not required in MID</i>	
FV (Volcanic ash advisory)	
FK (Tropical cyclone advisory)	
UA (AIREP)	
NO (ADMIN)	

Please list routine, scheduled OPMET bulletins (e.g. SA, SP, FT, FC) your State **receives**?

OPMET bulletin type	Specific bulletins
SA (METAR)	e.g. SABN31 OBBI;
SP (SPECI)	
FT (TAF 12 hours or greater)	
FC (TAF less than 12 hours)	

Please list non-routine, non-scheduled OPMET bulletins (e.g. WS, WC, WV, WA, FA, FV, FK, UA, NO) your State **receives**?

OPMET bulletin type	Specific bulletins
WS (SIGMET)	e.g. WSBN21 OBBI;
WC (SIGMET on tropical cyclone)	
WV (SIGMET on volcanic ash)	
WA (AIRMET) – <i>not required in MID</i>	
FA (GAMET) – <i>not required in MID</i>	
FV (Volcanic ash advisory)	
FK (Tropical cyclone advisory)	
UA (AIREP)	
NO (ADMIN)	

MET 2A - MID

26



MET 2A - MID

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location	SAS/P	TAF	Availability
1	2	3	4	5	6
AMMAN/QUEEN ALIA AQABA/KING HUSSEIN		OJAI OJAQ	Y Y	X X	F F
Kuwait KUWAIT/INTL AIRPORT		OKBK	Y	X	F
Lebanon BEIRUT/BEIRUT INTL		OLBA	Y	X	F
Libya BENGHAZI (BENINA INTL)		HLLB	Y	T	F
SEBHA (SEBHA INTL)	KUFRA (KUFRA INTL)	HLKF		T	F
TRIPOLI (TRIPOLI INTL)	TRIPOLI (MITIGA INTL)	HLLS	Y		F
		HLLM	Y	T	F
		HLLT	Y	T	F
Oman MUSCAT/MUSCAT INTL SALALAH		OOMS OOSA	Y Y	X X	F F
Qatar DOHA INTERNATIONAL HAMAD INTERNATIONAL		OTBD OTHH	Y	X X	F F
Saudi Arabia					
	ABHA	OEAB	Y	T	F
	AL BAHA	OEBA	Y	T	F
	AL JOUF	OESK	Y	T	F
	AL QAISUMAH/HAFR AL BATIN	OEPA	Y	T	F
	ARAR	OERR	Y	T	F
	BISHA	OEBH	Y	T	F
DAMMAM/KING FAHD INTERNATIONAL		OEDF	Y	X	F
	GASSIM/PRINCE NAYEF BIN ABDULAZIZ	OEGS	Y	T	F
	GURIAT	OEGT	Y	T	F
	HAIL	OEHL		T	F
JEDDAH/KING ABDULAZIZ INTERNATIONAL	JAZANKING ABDULLAH BIN ABDULAZIZ	OEGN	Y	T	F
	JUBAIL	OEJN	Y	X	F
MADINAH/PRINCE MOHAMMAD BIN ABDULAZIZ INTERNATIONAL		OEJB	Y	T	F
		OEMA	Y	T	F
	NEJRAN	OENG	Y	T	F
	RAFHA	OERF	Y	T	F
RIYADH/KING KHALED INTERNATIONAL		OERK	Y	X	F
	SHARURAH	OESH	Y	T	F
	TABUK/PRINCE SULTAN BIN ABDULAZIZ	OETB	Y	T	F



MET 2A - MID

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location	SAASP	TAF	Availability
1	2	3	4	5	6
Sudan KASSALA KHARTOUM PORT SUDAN <i>JUBA SOUTH SUDAN</i> Syrian Arab Republic ALEPPO/INTL BASSEL AL-ASSAD/INTL. LATTAKIA DAMASCUS/INTL United Arab Emirates ABU DHABI INTERNATIONAL AL AIN INTERNATIONAL DUBAI INTERNATIONAL DUBAI/AL MAKTOUM INTERNATIONAL FUJAIRAH INTERNATIONAL RAS AL KHAIMAH INTERNATIONAL SHARJAH INTERNATIONAL Yemen ADEN/INTL HODEIDAH/INTL MUKALLA/INTL SANAA/INTL TAIZ/INTL	TAIF TURAIF WADI AL DAWASIR WEJH YENBO/PRINCE ABDULMOHSIN BIN ABDULAZIZ	OETF OETR OEWD OEWJ OEYN	Y Y Y Y Y	T T T T C	F F F F F
	OBEID	HSKA HSSS HSOB HSPN	Y Y Y Y		F F F F
	<i>until FIR is developed for S SUDAN</i>		<i>PHSSJ</i>	<i>Y</i>	<i>F</i>
		OSAP OSLK OSDI	Y Y Y	T T X	F F F
		OMAA OMAL OMDB OMDW OMFJ OMRK OMSJ	Y Y Y Y Y Y Y	X X X X X X X	F F F F F F F
		OYAA OYHD OYRN OYSN OYSY OYTZ	Y Y Y Y Y Y	X T T T T T	F F F F F F