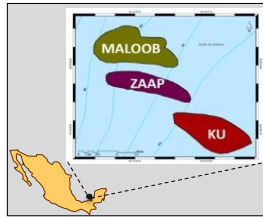


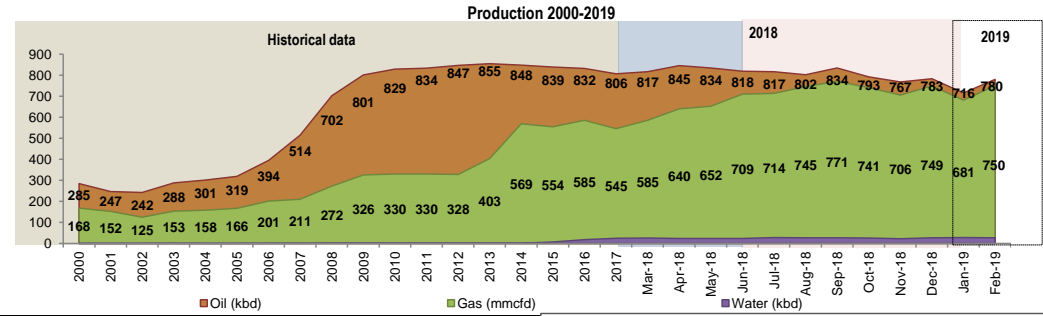
NATIONAL HYDROCARBONS COMMISSION
Ku-Malooob-Zaap Fields¹ Operational Report, updated February 2019

Field Map
Ku Maloob and Zaap



Thickness in oil window and average GOC* speed of movement by year

Field	Thickness ² (meters) ³		Average GOC speed of movement (vm/year)							
	max	min	2012	2013	2014	2015	2016	2017	2018	2019
KU	112	5	31	31	34	7	11	14	5	2
MB	351	188	40	67	22	19	18	21	24	23
ZP	199	4	14	46	46	43	46	22	16	16



Observed production and functioning wells⁴ (Historical and last 12 months)

Ku, Maloob, Zaap fields	Average 2000-2010	Annual							2018												2019	
		2011	2012	2013	2014	2015	2016	2017	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19		
Oil (kbd)	447	834	847	855	848	839	832	806	817	845	834	818	817	802	834	793	767	783	716	780		
Gas (mmcf)	206	330	328	403	569	554	585	545	585	640	652	709	714	745	771	741	706	749	681	750		
Water (kbd)	0.4	1.4	1.3	1.5	1.7	6.5	17.5	25.1	25.3	23.7	23.4	23.3	27.9	27.3	26.4	25.6	22.6	26.5	27.4	26.6		
Functioning wells (no.)	75	142	157	172	175	176	177	170	171	166	167	171	173	173	174	174	173	174	172	174		

¹ Ku, Maloob and Zaap are the main fields in Ku-Maloob-Zaap Production Active. Information was supplied by Pemex Exploración y Producción by Pemex in monthly reports.
² Thickness in cretaceous from Ku, Maloob, Zaap field in the reference month.
³ Information about GOC speed of movement in 2010 is not available. Estimations are based on data from 2009 and 2011.
⁴ Information about production in 2000-2009 comes from Base de Datos Institucional de Pemex (BDI).
⁵ Field pressure just considers information from Cretaceous play.
⁶ Cyclical wells are those that present high GWR, % water and/or salt, and therefore must be closed to be repaired.
⁷ What defines whether a well is above or below the GOC is the relationship between its peak and the average GOC level in the field (Maloob has 3 different zones at distinct GOC levels), thereof well distance is a reference.
⁸ 126 closures and reopenings are because of High Volume of Inventory.
⁹ 39 closures and reopenings are because of High Volume of Inventory.

Oil-Gas relationship observed by field, averaging by well (cf/b) (Historical and last 12 months)

Field	Average 2000-2010	Annual							2018												2019	
		2011	2012	2013	2014	2015	2016	2017 ⁶	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19		
Ku	535	520	553	548	754	1,381	1,418	5,122	4,522	4,501	4,804	5,097	5,180	5,268	5,274	5,338	5,255	5,033	5,093	5,189		
Maloob	287	268	270	275	356	366	423	521	407	506	454	446	420	512	514	511	551	562	599	590		
Zaap	244	365	349	349	357	446	486	731.4	660.2	669.1	722	797	962	672	665	719	712	770	716	637		
Total	456	396	394	390	491	717	725	1,679	1,430	1,451	1,509	1,628	1,705	1,693	1,713	1,746	1,747	1,710	1,709	1,689		

Pressure by field⁵ (kg/cm²)

Field	Average 2001-2011	2014	2015	2016	2017	2018	2019
Ku	137	120	117	114	112	109	107
Maloob	148	130	120	115	112	131	129
Zaap	146	130	123	118	115	134	132
Total	141	127	120	116	113	125	123

Annual change in pressure by field (%)

Field	Acum. 2001-2011	2014	2015	2016	2017	2018	2019	Acum. 2001-2019
Ku	-21.2%	0.0%	-2.8%	-2.1%	-2.2%	-2.2%	-1.8%	-30.0%
Maloob	-22.6%	0.4%	-7.5%	-4.2%	-3.3%	17.3%	-1.1%	-20.1%
Zaap	-24.7%	1.6%	-5.3%	-4.2%	-2.8%	16.5%	-1.0%	-20.5%
Total	-19.4%	0.7%	-5.2%	-3.5%	-2.8%	10.6%	-1.3%	-27.3%

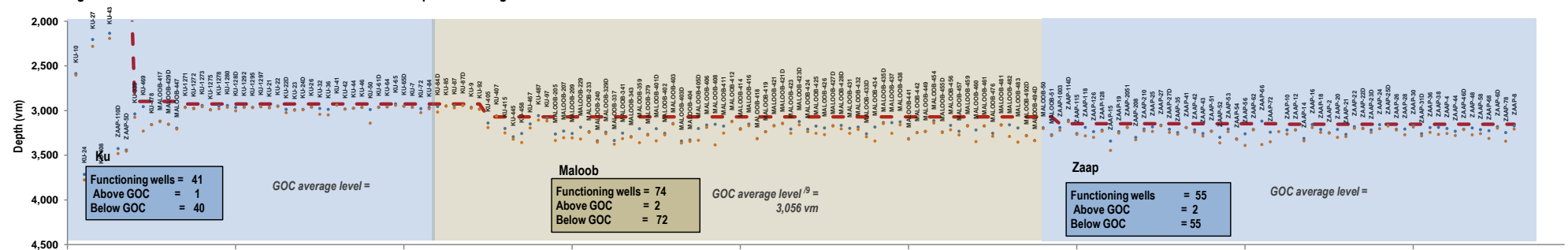
Closure and reopening of wells 2018-2019⁶ (no.)

Concept	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
Closure	23	4	3	1	11	3	1	6	40	12	91	17	212
Reopening	20	4	4	5	3	13	3	0	43	8	90	11	204

Completion and Major well repairs (no.)

Activity	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
Completion	1	1	0	0	1	0	1	1	0	0	1	0	6
Major repairs	2	1	0	0	1	0	0	0	1	2	0	0	7

Functioning wells distribution in this month and its distance with respect to average GOC in each field⁷



* Abbreviations: GOC= Gas-Oil contact, vm= vertical meters, vm/year= vertical meters by year, kbd= thousand barrels per day, mmcf= million cubic feet per day, cf/b= cubic feet per barrel, no.= number, kg/cm²= kilogram per square centimeter

