

**MC-20 POTENTIAL TO FLOW - COLUMN HEAD ESTIMATES- SEA WATER
and LAST FLOWING MIX**

Reservoir	Completion	Status at Ivan	Reservoir Fluid	Assuming Well Integrity				FLOW INSIDE WELL						Oil Reservoir FLOW INSIDE TUBING					Gas Reservoir FLOW INSIDE TUBING					
				Case 1 A FRACE Nodal Analysis Model	Case 1 B Driller's Hydrostatic Head Model	Case 1 C Modified Head Model	Case 2 (*) Catastrophic Loss of Well Integrity	Sea Water to Datum Depth			Sea Water to Mid Perfs			Last flowing fluid mix COLUMN to MID PERFS OIL CASE					Last flowing fluid mix COLUMN to MID PERFS GAS CASE					
				Datum (^{'ss})	P t= 0 Po (psig)	Cobb P RECHARG E (psig)	P (psig) Hydrost atic	@Po (psig) Ptl Flow	@P RECHRG (psig) Ptl Flow	@P RECHRG+1 0% (psig) Ptl Flow	ΔP to mid perfs vs. Datum	@P RECHRG (psig) Ptl Flow	@P RECHRG+1 0%(psig) Ptl Flow	Wcut (frac)	Free Gas (frac)	~(psi/ft) upto WD	P column (psig)	@P RECHRG+ 10%(psig) Ptl Flow	WGR (bw/MMscf)	~ (psi/ft) upto WD	P column (psig)	@P RECHRG+ 10%(psig) Ptl Flow		
FR20-1	A-17	ON	DRY GAS	YES	YES	YES		FLOW	FLOW	FLOW	-9.71	FLOW	FLOW	x	x	x	x	x		57	0.115	838	FLOW	
HRA-2	A-13	SI/DX	GAS+OIL RIM	YES	YES	YES		FLOW	FLOW	FLOW	-1.87	FLOW	FLOW	x	x	x	x	x		56.4	0.115	895	FLOW	
IRB	A-24	ON	OIL		-	-		FLOW	-	-	-3.50	-	-	0.03	0.00	0.353	2258.2	-						
IRD	A-21	ON	OIL	YES	YES	YES		FLOW	FLOW	FLOW	-0.11	FLOW	FLOW	0.84	0.00	0.445	3078.0	FLOW						
IRE	A-19ST	ON	OIL	YES	YES	YES		FLOW	FLOW	FLOW	-0.28	FLOW	FLOW	0.84	0.00	0.444	3281.5	FLOW						
IRF	A-22	ON	OIL		-	-		FLOW	-	-	-1.86	-	-	0.68	0.01	0.422	3118.8	-						
JRA	A-09ST	ON	OIL		-	YES		FLOW	-	-	-0.11	-	-	0.17	0.00	0.369	2501.5	FLOW						
JR20-1	A-03	SI	OIL+ GCAP		YES	YES		FLOW	FLOW	FLOW	-0.23	FLOW	FLOW	0.96	0.12	0.411	3213.5	FLOW						
JR20-1	A-08	SI/DX	OIL+ GCAP		YES	YES		FLOW	FLOW	FLOW	0.00	FLOW	FLOW	0.92	0.27	0.353	2785.5	FLOW						
KRA	A-11	ON	GAS	YES	YES	YES		FLOW	FLOW	FLOW	290.34	FLOW	FLOW	x	x	x	x	x		14.48	0.090	174	FLOW	
KRG	A-20	ON	OIL		-	YES		FLOW	-	-	-0.06	-	-	0.10	0.13	0.326	2487.3	FLOW						
LR20-1	A-01	ON	OIL+ GCAP	YES	YES	YES		FLOW	-	FLOW	1.41	-	FLOW	0.84	0.18	0.379	3205.5	FLOW						
LR20-1	A-12D	SI/DX	OIL+ GCAP		YES	YES		FLOW	-	FLOW	-0.40	-	FLOW	0.93	0.11	0.415	3511.1	FLOW						
LRA	A-14ST	SI	OIL		-	YES		FLOW	-	-	-0.11	-	-	0.60	0.10	0.385	3072.7	FLOW						
LRG	A-25	ON	OIL+ GCAP		-	-		FLOW	-	-	-1.02	-	-	0.84	0.02	0.436	3284.9	-						
LRG	A-26	ON	OIL+ GCAP		-	-		FLOW	-	-	-4.12	-	-	0.28	0.11	0.349	2699.5	-						
L1RC	A-07ST	SI	OIL		-	-		FLOW	-	-	-0.06	-	-	0.99	0.00	0.460	3867.7	-						
L3RA-2	A-02	ON	OIL+ GCAP		YES	YES		FLOW	FLOW	FLOW	-3.22	FLOW	FLOW	0.81	0.00	0.442	3850.2	FLOW						
L3RA-2	A-10	ON	OIL+ GCAP	YES	YES	YES		FLOW	FLOW	FLOW	0.06	FLOW	FLOW	0.93	0.01	0.453	3916.0	FLOW						
L3RA-2	A-18	SI	OIL+ GCAP		YES	YES		FLOW	FLOW	FLOW	-0.79	FLOW	FLOW	0.98	0.02	0.455	3938.8	FLOW						
L1RA2	A-01	X	No info.		-	-		-	-	-		-	-											
L3RH	A-28	SI	DRY GAS		YES	YES		FLOW	-	FLOW	-0.18	-	FLOW	x	x	x	x	x		10000	0.425	2674	FLOW	
MR20-1	A-04	ON	OIL	YES	YES	YES		FLOW	FLOW	FLOW	-0.17	FLOW	FLOW	0.91	0.00	0.453	4069.8	FLOW						
MR20-1	A-16D	ON	OIL	YES	YES	YES		FLOW	FLOW	FLOW	-1.07	FLOW	FLOW	0.88	0.00	0.449	4045.1	FLOW						
M1RA	A-23	ON	GAS		-	YES		FLOW	-	-	0.18	-	-	x	x	x	x	x		0	0.080	906	FLOW	
M1RG	A-26	X	No info.		-	-		-	-	-		-	-											
NR20-1	A-06	ON	OIL+ GCAP		YES	YES		FLOW	-	FLOW	-0.35	-	FLOW	0.87	0.00	0.448		FLOW						
NR20-1	A-12	SI/DX	OIL+ GCAP		YES	YES		FLOW	-	FLOW	1.07	-	FLOW	0.90	0.56	0.452		FLOW						



Potential to Flow

(*) In Case 2 There is Potential to Flow from every HC sand
Not just the sand being produced at time of incident
(**) Dual Completion in A-12 counted as a single WELL

WELL Count (**): 9 16 20 25