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

Reservoir	Completion	Status at Ivan	Reservoir Fluid	Assuming Well Integrity: Case 1 A FRACE Nodal Analysis Model	Case 1 B Driller's Hydrostatic Head Model	Case 1 C Modified Head Model	Plat-Sparks Fig 5.1 Recharge P > Hydrostatic	Case 2 (*) Catastrophic Loss of Well Integrity
F R20-1	A-17	ON	DRY GAS	YES	YES	YES	YES	
H RA-2	A-13	SI/DX	GAS+OIL RIM	YES	YES	YES	YES	
I RB	A-24	ON	OIL		-	-	-	
I RD	A-21	ON	OIL	YES	YES	YES	YES	
I RE	A-19ST	ON	OIL	YES	YES	YES	YES	
I RF	A-22	ON	OIL		-	-	-	
J RA	A-09ST	ON	OIL		-	YES	-	
J R20-1	A-03	SI	OIL+ GCAP		YES	YES	YES	
J R20-1	A-08	SI/DX	OIL+ GCAP		YES	YES	YES	
K RA	A-11	ON	GAS	YES	YES	YES	YES	
K RG	A-20	ON	OIL		-	YES	-	
L R20-1	A-01	ON	OIL+ GCAP	YES	YES	YES	borderline	
L R20-1	A-12D	SI/DX	OIL+ GCAP		YES	YES	borderline	
L RA	A-14ST	SI	OIL		-	YES	-	
L RG	A-25	ON	OIL+ GCAP		-	-	-	
L RG	A-26	ON	OIL+ GCAP		-	-	-	
L1 RC	A-07ST	SI	OIL		-	-	-	
L3 RA-2	A-02	ON	OIL+ GCAP		YES	YES	YES	
L3 RA-2	A-10	ON	OIL+ GCAP	YES	YES	YES	YES	
L3 RA-2	A-18	SI	OIL+ GCAP		YES	YES	YES	
L1 RA2	~~A-01~~	X	No info.		-	-	-	
L3 RH	A-28	SI	DRY GAS		YES	YES	borderline	
M R20-1	A-04	ON	OIL	YES	YES	YES	YES	
M R20-1	A-16D	ON	OIL	YES	YES	YES	YES	
M1 RA	A-23	ON	GAS		-	YES	-	
M1 RG	~~A-26~~	X	No info.		-	-	-	
NR 20-1	A-06	ON	OIL+ GCAP		YES	YES	YES	
NR 20-1	A-12	SI/DX	OIL+ GCAP		YES	YES	YES	
	WELL Count (**)			9	16	20	16	25

Potential to

Datum ('ss)	P t= 0 Po (psig)	Cobb P RECHARGE (psig)	P (psig) Hydrostatic	FLOW INSIDE WELL: @Po (psig) Ptl Flow	@P RECHRG (psig) Ptl Flow	@P RECHRG+10% (psig) Ptl Flow	ΔP to mid perfs vs. Datum	@P RECHRG (psig) Ptl Flow	@P RECHRG+10%(psig) Ptl Flow	FLOW INSIDE TUBING: Wcut (frac)	Free Gas (frac)	~(psi/ft) upto WD	P column (psig)	@P RECHRG+10%(psig) Ptl Flow	FLOW INSIDE TUBING: WGR (bw / MMscf)	~ (psi/ft) upto WD	P column (psig)	@P RECHRG+10%(psig) Ptl Flow
5687	2875	2875	2519	FLOW	FLOW	FLOW	-9.71	FLOW	FLOW	x	x	x	x	x	57	0.115	838	FLOW
6393	3171	3171	2832	FLOW	FLOW	FLOW	-1.87	FLOW	FLOW	x	x	x	x	x	56.4	0.115	895	FLOW
6181	3149	1328	2738	FLOW	-	-	-3.50	-	-	0.03	0.00	0.353	2258.2	-				
6918	3455	3328	3065	FLOW	FLOW	FLOW	-0.11	FLOW	FLOW	0.84	0.00	0.445	3078.0	FLOW				
7389	3656	3441	3273	FLOW	FLOW	FLOW	-0.28	FLOW	FLOW	0.84	0.00	0.444	3281.5	FLOW				
7324	3562	2730	3245	FLOW	-	-	-1.86	-	-	0.68	0.01	0.422	3118.8	-				
6673	3505	2444	2956	FLOW	-	-	-0.11	-	-	0.17	0.00	0.369	2501.5	FLOW				
7770	4116	4144	3442	FLOW	FLOW	FLOW	-0.23	FLOW	FLOW	0.96	0.12	0.411	3213.5	FLOW				
7770	4116	4144	3442	FLOW	FLOW	FLOW	0.00	FLOW	FLOW	0.92	0.27	0.353	2785.5	FLOW				
8986	4252	4217	3981	FLOW	FLOW	FLOW	290.34	FLOW	FLOW	x	x	x	x	x	14.48	0.090	174	FLOW
7457	3613	2844	3303	FLOW	-	-	-0.06	-	-	0.10	0.13	0.326	2487.3	FLOW				
8420	4419	3549	3730	FLOW	-	FLOW	1.41	-	FLOW	0.84	0.18	0.379	3205.5	FLOW				
8420	4419	3549	3730	FLOW	-	FLOW	-0.40	-	FLOW	0.93	0.11	0.415	3511.1	FLOW				
7912	4180	3027	3505	FLOW	-	-	-0.11	-	-	0.60	0.10	0.385	3072.7	FLOW				
7500	3952	1657	3323	FLOW	-	-	-1.02	-	-	0.84	0.02	0.436	3284.9	-				
7500	3952	1657	3323	FLOW	-	-	-4.12	-	-	0.28	0.11	0.349	2699.5	-				
8423	4277	3151	3731	FLOW	-	-			-	0.99	0.00	0.460	3867.2	-				
8654	4435	3925	3834	FLOW	FLOW	FLOW			FLOW	0.81	0.00	0.442	3821.7	FLOW				
8654	4435	3925	3834	FLOW	FLOW	FLOW			FLOW	0.93	0.01	0.453	3916.5	FLOW				
8654	4435	3925	3834	FLOW	FLOW	FLOW			FLOW	0.98	0.02	0.455	3931.8	FLOW				
						-			-									
6276	3200	2612	2780	FLOW	-	FLOW	-0.18	-	FLOW	x	x	x	x	x	10000	0.425	2674	FLOW
8986	4650	4078	3981	FLOW	FLOW	FLOW	-0.17	FLOW	FLOW	0.91	0.00	0.453	4069.8	FLOW				
8986	4650	4078	3981	FLOW	FLOW	FLOW	-1.07	FLOW	FLOW	0.88	0.00	0.449	4045.1	FLOW				
9157	4682	1920	4057	FLOW	-	-	0.18	-	-	x	x	x	x	x	0	0.080	906	FLOW
						-			-									
9319	4886	4002	4128	FLOW	-	FLOW	-0.11	-	FLOW	0.87	0.00	0.448		FLOW				
9319	4886	4002	4128	FLOW	-	FLOW	1.07	-	FLOW	0.90	0.56	0.452		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