# LATJ PROGRAM (Load Assessment Tool For Jack-up (On-board Load and Stability Management Program) By SB MARINE Mumbai, India info@sb-marine.com



User ID and password protected log in. Can track the conditions created by each user. Large number of Loading conditions can be stored in data base for future use.

### **Rig Details from Approved Documents**

					Leg Positions	X
Rig Basic	Demo Rig			X	Condition Name : F-Ap Rig Mode : Floa	pr2-2013-1
C     Metric     ©     FPS       Platform/Hull     Energth :     175       LBP :     174     Depth :     25	Leg Details No. of Legs : 3 Leg Length : 406.67 Forward Leg from Bow : 30	ance between l nce between th	egs : 115 No. of . e legs : 120 No. of .	Racks per Leg 3 Pins per Rack 4		
Allowable Parameters Floating / Prelo Load Line Draft (Max Draft) : Variable Deck Load (Can Buoyant) : Variable Deck Load (Can Flooded) : Max Heel (in Degree) : Max Trim (in Degree) : Var Prelaod Weight : Min Preload Weight : Max Elevated Load (Preload) : Note: LCG ref. from Bow (+) Aft, TC Pinion Load upto 1000 kips in	ad / Elevated         15       Max Elevated Load (Drilling) :         4594.1       Max Variable Load (Drilling) :         3105.51       Max Elevated Load (Storm)         0.3       Max Variable Load (Storm)         1       Max Elevated Load (Jacking) :         11670       Max Variable Load (Jacking) :         3212       Max Pinion Load :         23350       G ref. from C.L. of Hull (+) Stbd., (-) Port, VCG case of emergency	15548 3867 13259 1579 15840 4160 700 (+) up ref. from	For Draft Calculations Long, from Frame 0 Fwd-Port: 30 Fwd-Stbd : 30 Aft-Port : 145 Aft-Stbd : 145 Save m baseline of Hull (+) up	Transv. from CL           Fwd-Port :         0           Pwd-Stbd :         0           Aft-Port :         -60           Aft-Stbd :         60		

• Rig details to be inserted in program one time from approved Operation manual, unless there is any further change in rig specification and that will be edited by only authorized person protected with a password. Hence, mishandling or errors can be avoided.

• Graphical representation of Leg TOC and Cantilever & Drill Floor location.

# **<u>Facility for creating Loading Conditions from</u>** <u>Existing or New with Different Rig Configuration</u>



All major MOM drawings can be attached to the program data base and made readily available on selection. This will help user to understand. All previous loading cases are stored in database and any condition and date wise selection is possible. The rig mode, new or existing condition can be selected from single screen to get the loading condition.

SELECT	LOADING CASE AND	RIG MODE	
C New 💽 Existing			
Select Rig Mode Floating C Preload C Jacking (	Drilling C Storm		
Condition Name : F-Apr2-201	3.1		
Created By : Demo			
Greation Date : 02/04/201	3 9:42:45 PM	All and a second	-
	ect Delete Close		A

# **User Input with Modified Allowable Values**

	Leg Reaction (User)	Leg Reaction (Manual
Drilling Condition :	6309.60	8032.00
Jacking Condition :	4800.00	00.000
Preload Condition :	7257.60	9072.00
Storm Condition :	5555.60	6227.00

In some cases like missing pinion, rig repair mode or other factors allowable limit can be reduced. In that case user can modify the allowable values to give warning while exceeding the limit.

# **Selection of Floating Mode, Graphical Rotary**

### positions representation etc.

		FLOATING MODE	
Condition Name:	F-Apr2-201	3-1	
Rig Mode :	Floating		
Field Tow Cans	Buoyant	Field Tow Cans Flooded	🕥 Ocean Tow Cans Buoyant



Selection of all modes of operation inclusive of different Floating Modes, Preload, Jacking, Drilling and Storm Modes, Centre of Rotary Position, Condition data are shown as an user progresses with creating the condition.

		Demo Rig	
Condition Name:	F-Apr2-2013-	1 Lor	ngitudinal dist. between Legs (ft) 115
Rig Mode:	Floating	7	Fransverse dist. between legs (ft) 120
LCG of Rotary R	ef Frame 0 (ft)	; 151.5	TCG of Rotary Ref CL of Hull (ft) : 0
Water Depth (ft)	0	Air Gap (fl) :	Penetration (ft) :
Leg TOC (A) :	9.25	Wind Leg Load (kips) :	Wave Leg Load (kips) :

## Weight management by Grouping and Sub-grouping

Weight data for all items are inserted in various forms as below. Only density & sounding will be user input. Immediate change in Jack-up rig data will occur like in floating mode change of weight, draft, heel & trim. In case of elevated mode corresponding change in leg reaction, pinion load will be shown. For any result outside limit set as per user will be shown instantly with red marking.

tt, 100 rel. trom 0.1. of Th	111 (+) Sthd., (-) Port, VCO re	l, tro Daselio	ne of Thill (†	) TP								
	Unill Water	L	LOADIN	G DET	AILS I	OR Demo	Rig				Iulad+Loro 'within Limt	
	Eæl(da) .		$\operatorname{Trics}(\operatorname{de}_{\lambda})$ .	0.93		D:af(f) .		cu,	Tried KO(	n), <mark>31.85</mark>		
	Note: Select "Ullage" Select Sounding/Ullage. S Condition Name:	<b>hr Solid Tauk</b> hunning Ap 2-2013-1	r R∑M Um:4	ode : Un Dotenz: FPS	10 <u>1</u>					DRILL	← →	
	Diil'w'aten Ban Mano	Idex Sing MIVFeet	Lexus,	Corrects MCFeel	Sounding McCarli	Weight Towikies	LC9 ATFest	TCO MiFest	MCTF MEFFest	FSML Ton-MicKip-Fi	FSMT Ton Markip At	
	DRILL WATER SP	25	62.4	0	0	0 10	61.79	51.01	0 C0	0 00	0 00	
	DRILL WATER 38	25	62.4	0	0	0 10	61.79	51.01	0 CO	0 00	0 00	
	DRILL WATER 4P	25	62.4	0	0	010	-0583	-71.58	0 CO	0 00	0 00	
	DRILL WATER 45	25	62.4	25	0	650.26	0369	73.73	<b>1</b> 2.75	0 00	0 00	
	Drill Water					610.26	.105 69	74.74	j2.7:	i.0i	200	
	Condition Tata Note: Click on "Finalize Click on "Soos" be	Cond." to lock titun to retain a	new condition	Τω	ik Plan	18753 12 Print (70	:05:59 857	2.21 View Chang	31.25	6.06 Finitia	t. (P. Romie – Ottan	

### **Program calculates results and Generates warnings**





Various warning are generated on result. User may go back to input and can modify the loading condition if he desires.

Draft at various marks can be shown as calculated. For draft more than allowable limit and heel more than user set value, program will generate warning.

### Variable Summary Report

SBM	larine						Condition D	ate :02/04/2013	9:42:45 PM
in Owner							Prepared	By :Demo	
	LOAD			RY FOR D	emo Ria				
Condition Name	e :F-Apr2-2013-	1	Rig Mode :F	Floating		Loading Car	se : Field Tow	Cans Flooded	
	LCG: +VE	AFT from Fram	ne A, TCG: +VE	Stbd., -VE Port	t from Hull C.L.	VCG: +VE fro	m Hull Baseline		
Loading Summary	Weinha	100	100	1000	1714	PELET	1. 14/044	7 1000	V MOM
ube Of	14.51	117.80	-13.82	12.80	1 sense	1281	1,709.33	-200.95	185.76
Rudh Tanka	80.00	30.25		33.50			2.420.00		2,680,00
antiquer Beam Herrs			-			-			
		2	2		2.	-	10		
Call Figure Mine							10		s - s
unit Floor mille	14.4	1000		1010	8	-			
uni water Tanka	660.26	103.64	76.76	12.78			66,462.36	50.661.98	8,424.92
Drilling Loads	1,000.00	140,12					140,120.00	20	-
Fuel Dil	379.97	101.27	36.02	4.02	13		38,478.29	13,685.97	1,527.50
80P					2		-		à
Liquid Mud		-		-	2		-		
Main Deck Tubulara						-	4		
Misc Stores	110.00	112.42	0.64	46.15			12,365.40	70.90	5,076,00
Misc Tanks		0	Û.		2	1	- 25	6	1
Miscellaneous Berts	460.00	79.60	-471	28.09			36,010.00	-3,088.00	12,920.00
Potable Tanka	354.51	144.26	-30.50	15.24	<u> </u>		52,553.50	-11,117.56	5,555.12
Preload Tanka				ĝ	8	<u>.</u>	1	12	1 1
Sack Storage	140.00	55.70	35.60	8.00			8,218.00	5,404.03	1,120.00
Lightship Weight	15,546.67	103.68	-0.76	36.01		1	1,011,735.50	-12,065.79	359,998.05
ATJ									Page 1 o
Condition Name	e :F-Apr2-2013- LCG: +VE	AFT from Fram	Rig Mode :F ne A, TCG: +VE	Stbd., -VE Por	t from Huli C.L.	Loading Car VCG: +VE fro	se : Fleid Tow m Hull Baseline	Cans Flooded	
Group_Name	Weight	LCG	TOG	VCG	PSML	PSMT	L_MOM	T_MOM	V_MOM
Vartable Liquid	1,419.25	113.60	37.38	11.05	0.00	0.00	161,233.48	53,049.42	15,693.41
Variable Solid	790.00	75.47	3.02	27.59	0.00	0.00	59,520.40	2,386.90	21,796.00
Condition Total	18,758.12	105.59	231	31.85	0.00	0.00	1,960,710.47	43,370.53	597,475.46

Loading Condition summary and report are generated under separate menu 'Reports'. Interactive print options are also available to take print from printer & make .pdf file also

### **Result Summary**

#### Graphical representation of Result Summary with warning



#### **Floating Condition**



#### **Elevated Condition**

### **Consumable Summary**



This feature allows the user to view the inventory of consumable items available on different locations of the unit with total available capacities to load the consumables from supply boats.

### **Interactive Menu Bar and Icon**





File	Rig Data	Loading Data	Load Equ	alization	Reports	Help	Sign Out
JNC	Rig Info Rig Bas Unit & Rig Tat	ormation sic Co-Ordinate Sy bles sition	stem •	) 🚥 ails.			
	Rig Pla User A	n Ilowable Leg Re	► action				

#### Load Equalization by selecting tanks with Transfer method

a cquanzacion	Load Equalization for :: I	DEMO
Condition Name : <mark>P-Aug16</mark> Fig Mode : Preload	8-2013-1 Fwd Leg Reaction: 9071.99	Aft-Strbd. Leg Reaction: 9072.00 Aft-Port Leg Reaction: 9072.00
Drill Water		
Diesel Fuel		F
Lube Oil		F
Liquid Mud Tanks		<b>Г</b>
Misc Tanks		r
Preload Tanks		· r
Transfer Method	NOTE: Select only one group for Transfer Me	ethod.

The load equalization is applicable for both floating and elevated mode. Using this feature the Trim & Heel can be eliminated in floating mode. In elevated mode the leg reaction can be bought with in the target value, thus legs or pinions will not be over stressed.

All the existing tank sounding are graphically shown for various tanks. Like all preload tanks are empty at the moment.

### Load Equalization by Internal / External Transfer

Load Equa	lization	Load Equalization for :: Rig New 1	8 <b>8</b>
oad Equalization	ition Name : E-Dec31-201.	2-3 Afi Load Equalization for :: Rig New 1	t-Strbd. Leg Reaction: 0.00
Fwd Leg Reaction	: 0.00	Aft-Port Leg Reaction: 0.00	Aft-Strbd. Leg Reaction: 0.00
Internal	C External	Sounding (Inch.) 20	
From Tank C DRILL WATER 3P C DRILL WATER 3S C DRILL WATER 4P C DRILL WATER 4S	Sounding (inch) Max         Current           300.00         0.00           300.00         0.00           300.00         32.33           300.00         72.97	Resultant Changes Old Sndng (Inch) : DRILL WATER 4P : 32.334 New Sndng (Inch) : DRILL WATER 4P : 12.334 Old Sndng (Inch) : DRILL WATER 4S : 72.972 New Sndng (Inch) : DRILL WATER 4S : 92.972	To Tank         Sounding (inch) Max           C DRILL WATER 3P         300.00         0.00           C DRILL WATER 3S         300.00         0.00           C DRILL WATER 4P         300.00         32.33           • DRILL WATER 4S         300.00         72.97
Mi Pre	c Tanks	DTE: Select only one group for Transfer Method.	View Changes Save Cl

Load equalization can be done by both external or internal transfer of liquid . For internal transfer select the tanks and then program will calculate the best solution to establish minimum heel / trim in floating mode or closer to equal leg reaction in elevated mode.

### **Tank Plans**



TankPlansopeningcommandisattachedtotheloadequalizationscreen.Duringloadequalizationthisdataisuseful to plan by user.user.user.

# **Detailed Report**

A									Print Date : 16-07-2013
SEM	Marine								Condition Date :31-12-2012 PM 12:45:0
Owning Company									User Name: SBM
									Prepared By :SBM
				Detail Sur	mmary Fe	or :: Rig N	ew 1		
Condition Name :	E-Dec31-20	12-3	RIg Mode :	Storm					
					RIG DET	AILS			
Jnit System : FPS									
Platform/Hull							-		
	Length :	160 M	Breadth :	1/5 T	LBP:	1/4 π	Deptn :	25 ft	
Leg Details									
No. of L	cga: 3		Longitudinal Distance	e Between Legs :	115 ft	No	of Racks per Log :	3	
legler	igth: 406.67 ft		Transverse Distance R	etween the Legs :	120 fi	N	o. of Pins per Rack :	4	
Forward Lee	from Bow :	30 ft							
L	oad Line draft (Mao	x Draft) :	15 t.	N	ax Elevated L	oad (Urilling) :	15548 Kip	5	
Variable	Dock Load (Field T	Fransit) :	4694.1 ft	v	lax Vorioble L	oad (Drilling) :	3867 Kip	3	
Variable F	eck Load (Ocean 1	Fransit) :	3105 51 f	1	lax Elevated	l oad (Storm) :	13259 Kip	5	
	Max Heel (in D	Degree) :	0.3		Max Variable	Load (Storm) :	15/9 Kip	5	
	Max Trim (in D	Degree) :	1	Ma	ax Elevated Lo	ad (Jacking) :	15840 Kip	5	
	Variable Preload	Weight :	11670 Kips	N	ax Variable I o	ad (.lacking) :	4150 Kip	8	
	Min Preload	Weight :	3212 Kips		Max	Pinion Load :	700 Kip	5	
Ма	x Elevated Load (P	reload) :	23350 Kips						
Longitudinal from Fr	ame 0			Transverse fro	m CL				
Forward-Port :	30 ft	After-Port	: 145 fi	Forward-P	ort :	0 ft	After-Port :	-60 ft	ft
Forward-Stbd :	30 <b>π</b>	After-Stbd	: 145 n	Forward-St	bd :	n O	After-Stod :	60 n	π
				c	ONDITION	DATA			
LCG of Rotary	Ref fram 0 (ft) :	151.5	TCG of Rot	ary Ref CL of Hull (ft)		C			
Water Depth (ft) ;	GO	Air Ga	ıp (ft); 70.00	Penetration (ft	; 24.00		Leg TOC (ft) :	162	
Note : LCG reffrence fro Pinion Logd unit	m Bow(+) Aft,TCG	ot emergency	Hull (+) Stbd.,(-) Port, V	CG (+) up ref. from ba	seline of Hull	(+) up			
AT.I	reee rupe in case	or other floure le							Page 1

Program generates detail reports of the loading condition automatically on finalization of loading data. It gives all details including dates, condition id, rig input, weight details and vessel condition etc.

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# Help File

B Help		×
Hide Back Print Coptions		
Hide Back Print Options	<b>Deterview</b> Load Assessment Tools for Jackups (LATJ) Software is developed for Marine engineering based busness Companies. It's main purpose is to maintain the stability and structural integrity of the rigs. The Rig may be in different conditions like frequencies of software is to maintain the stability and integrity through it's Heel, Trim and different conditions grade the database. At the time of installing and initializing the software the preloading Data, Input Hydrostatic Table for Lirking hydrostatic table with weight anc Center of Gravity and conditions (Light weight of the Rig) will be entered by the Admin of this software for the first time and fix of unit system (SI and FPS). Then this software will show current man Draft, heel / trim condition; the end to table weight and LCG/TCG/VCG and free surface calculation (only for tanks) which should match with the actual physical condition; the effect that the changes will bring and will warm about adverse situations like Heel/Timi/alfware will show the effect that the changes will bring ard will warm about adverse situations like software also include an AUTC BALLAST option for excessive heel / trim calculation only for tanks) which should match with leg and cantilever position. The software will allow users to view tank condition with progras sounding level idea (height of the occupied material inside tank) and will show the vessel outline plan in top and side view mode with leg and cantilever position.	
() )	Find out mean draft and then other hydrostatic parameters. Calculate the drafts at various draft marks and vice-versa. If various drafts are given then to calculate the mean draft ( If mean draft exceeds the load line draft ). Input <b>Allowable KG</b> data for various wind speed. Check the VCG value after free surface correction with allowable KG at particular draft (If VCG exceeds the allowable KG).	

Help File is available with the program. It is highly user friendly program and very easy to us.

