10 ¹² -	M_{L} =0.5 M_{w} =0.6 f_{c} =100.0 Hz	-	$M_L=0.3 M_w=0.6$ $f_c=100.0 Hz$	$M_L = 0.6 M_W = 0.9$ $f_c = 71.9 \text{ Hz}$	$M_L = 0.7 M_w = 0.8$ $f_c = 100.0 \text{ Hz}$	$M_L=0.6 M_w=0.7$ $f_c=87.4 Hz$	$M_{L}=1.1 M_{W}=1.0$ $f_{c}=81.2 Hz$	$M_L = 0.4 M_w = 0.7$ $f_c = 69.2 \text{ Hz}$
10 ¹⁰ -		-	***************************************		-			
10 ¹² -	2018156105500	2018156132827	2018157010141	2018157013858	2018157121700	2018158072013	2018158204112	2018159000959
	M_{L} =0.3 M_{w} =0.5 f_{c} =100.0 Hz	M_{L} =0.8 M_{w} =0.9 f_{c} =100.0 Hz	$M_{L}=0.8 M_{W}=0.9$ $f_{c}=75.6 Hz$	M_{L} =0.5 M_{w} =0.7 f_{c} =93.8 Hz	M_{L} =0.6 M_{W} =0.7 f_{c} =100.0 Hz	$M_L = 0.5 M_w = 0.7$ $f_c = 95.1 \text{ Hz}$	$M_L=1.0 M_w=1.3$ $f_c=63.8 Hz$	$M_{L}=0.9 M_{W}=1.0$ $f_{c}=65.8 Hz$
10 ¹⁰ -	2018159011231	2018159035257	2018159044000	2018159120046	2018159152310	2018160051518	2018160054115	2018160102510
10 ¹² -	M_L =0.7 M_w =0.9 f_c =89.2 Hz	$M_L=0.4 M_w=0.5$ $f_c=100.0 Hz$	$M_L=0.3 M_w=0.5$ $f_c=94.4 Hz$	$M_L=0.6 M_W=0.9$ $f_c=74.6 \text{ Hz}$	$M_L=0.6 M_w=0.7$ $f_C=100.0 Hz$	$M_L=0.8 M_w=0.9$ $f_c=99.6 Hz$	$\begin{array}{c} - & M_{L} = 0.2 \ M_{W} = 0.4 \\ f_{C} = 100.0 \ Hz \end{array}$	$M_L=1.4 M_w=1.6$
10 ¹⁰ -	2018160135358	2018160181943	2018160211026	2018161004449	2018161102425	2018161172544	2018162012825	2018162052548
10 ¹² -	M_{L} =0.6 M_{w} =0.7 f_{c} =100.0 Hz	$M_{L}=0.6 M_{W}=0.6$ $f_{c}=100.0 Hz$	$-\frac{M_{\rm L}=0.7\ M_{\rm w}=0.8}{f_{\rm c}=100.0\ \rm Hz}$	-	$M_{L}=0.9 M_{W}=1.1$ $f_{c}=72.0 \text{ Hz}$	$-\frac{M_{L}=0.7 M_{W}=0.8}{f_{c}=98.3 \text{ Hz}}$	$M_L=0.9 M_w=1.1$ $f_c=73.6 \text{ Hz}$	$-\frac{M_{L}=0.7 \ M_{w}=0.8}{f_{c}=83.9 \ Hz}$
10 ¹⁰ -	7 _c =100.0 Hz	7 _c =100.0 Hz	I _c =100.0 H2		I _C =72.0 HZ	1 _C =90.3 H2	1 _c -13.0 Hz	1,-03.9 HZ
	2018162102701	2018162103517	2018162124708	2018162134139	2018162195803	2018162224749	2018163001121	2018163031320
1012 -		$M_L = 0.5 M_w = 0.7$ $f_c = 80.9 \text{ Hz}$	$M_{L}=1.1 M_{W}=1.3$ $f_{c}=57.9 \text{ Hz}$	$M_{L}=1.0 M_{W}=1.2$ $f_{c}=58.9 Hz$	$M_{L}=0.7 M_{W}=0.7$ $f_{c}=100.0 Hz$	$M_L=0.5 M_W=0.6$ $f_c=86.8 \text{ Hz}$	M_{L} =0.2 M_{w} =0.4 f_{c} =100.0 Hz	$M_L=0.4 M_w=0.6$ $f_c=100.0 Hz$
10 ¹⁰ -	2018163115829	2018163132124	2018164031000	2018165002042	2018165152357	2018165200500	2018166021841	2018166111647
10 ¹² -	$M_L=1.0 \ M_w=1.1$ $f_c=90.3 \ Hz$	$M_{L}=0.4 M_{W}=0.5$ $f_{c}=91.9 Hz$	$M_{L}=0.6 M_{w}=0.7$ $f_{c}=70.2 Hz$	$M_L=0.4 M_w=0.6$ $f_c=100.0 Hz$	M_{L} =0.6 M_{W} =0.7 f_{c} =97.6 Hz	$M_{L}=0.4 M_{w}=0.4$ $f_{c}=100.0 Hz$	$M_{L}=0.4 M_{W}=0.5$ $f_{c}=98.8 \text{ Hz}$	$M_{L}=0.8 M_{w}=1.0$ $f_{c}=61.1 Hz$
10 ¹⁰ -				***************************************				- Cook of the last
10 ¹² -	2018168094946 	2018168112428 	2018169024000	2018169033430	2018169042045 	2018169213726 	2018169230658 	2018170012100
10 ¹⁰ -	f _c =100.0 Hz	f _c =70.5 Hz			f _c =88.5 Hz	f _c =70.0 Hz	f _c =70.8 Hz	f _c =86.8 Hz
	2018170013500	2018170022530	2018170070706	2018170141444	2018170145100	2018170191546	2018170200105	2018170210141
10 ¹² -	M _L =1.3 M _w =1.5 6=58 LHz	$M_L = 0.8 M_w = 0.8$ $f_c = 64.0 \text{ Hz}$	$M_{L}=0.8 M_{W}=0.9$ $f_{c}=61.2 Hz$		$M_L = 0.7 M_W = 0.8$ $f_c = 93.9 \text{ Hz}$	$M_L=0.8 M_W=0.8$ $f_c=76.4 Hz$	M_{L} =0.6 M_{w} =0.6 f_{c} =100.0 Hz	$M_L = 0.6 M_W = 0.6$ $f_c = 100.0 \text{ Hz}$
10 ¹⁰ -	2018171001230	2018171003700	2018171005900	2018171034700	2018171100309	2018171100500	2018171101020	2018171113245
10 ¹² -		$M_{L}=0.8 M_{W}=0.9$ $f_{c}=86.3 Hz$	$-\frac{M_{L}=1.1 M_{w}=1.3}{f_{c}=55.1 \text{Hz}}$	1 6 M,=1.8 - 7c > 9.2 Hz	$M_{L}=0.4 M_{W}=0.6$ $f_{c}=95.6 Hz$	$M_{L}=0.8 M_{W}=0.9$ $f_{c}=53.2 Hz$	$M_L=0.5 M_W=0.6$ $f_c=85.2 Hz$	-
10 ¹⁰ -	•••							
10 ¹² -	2018171120032 M _L =0.6 M _w =0.6	2018171170704 	2018171173814 	2018171232614 	2018171233929 	2018172001100 	2018172010600 M _L =0.4 M _w =0.5	2018172041700
10 ¹⁰ -	M_{L} =0.6 M_{w} =0.6 f_{c} =93.6 Hz	$M_{L}=0.8 M_{W}=0.9$ $f_{c}=90.1 \text{ Hz}$	$M_{L}=1.2 M_{W}=1.5$ $f_{L}=56.8 Hz$	M_{L} =0.8 M_{W} =1.0 f_{c} =62.8 Hz	M_{L} =0.8 M_{w} =0.9 f_{c} =79.5 Hz	$M_L = 0.7 M_W = 0.8$ $f_c = 89.5 Hz$	M_{L} =0.4 M_{w} =0.5 f_{c} =100.0 Hz	$M_L = 1.0 M_W = 1.3$ $f_c = 42.6 \text{ Hz}$
±∪-~ -	2018172070230	2018172090030	2018172175518	2018172180735	2018172183326	2018172230708	2018172234909	2018173042858
10 ¹² -	$M_L = 0.9 M_W = 0.9$ $f_c = 68.4 \text{ Hz}$	$M_L=0.7 M_w=0.8$ $f_c=67.5 Hz$	$M_L=0.9 M_W=1.0$ $f_c=87.3 Hz$	$M_L=0.5 M_w=0.6$ $f_c=83.7 Hz$	$M_{L}=1.0 M_{W}=1.1$ $f_{c}=60.6 \text{ Hz}$	$M_L=1.1 M_w=1.3$ $f_c=48.1 \text{ Hz}$	$M_{L}=0.0 M_{w}=0.6$ $f_{c}=80.4 Hz$	M_L =0.6 M_w =0.7 f_c =77.3 Hz
10 ¹⁰ -	2018173043508	2018173072237	2018173130130	2018173142304	2018173151655	2018173181236	2018173191258	2018173214953
10 ¹² -	M_{L} =0.8 M_{w} =1.0 f_{c} =59.1 Hz	$M_{L}=0.7 M_{W}=0.8$ $f_{c}=81.6 \text{ Hz}$	$-\frac{M_{L}=0.9\ M_{W}=1.0}{f_{c}=52.2\ Hz}$	$M_L=1.0 M_W=1.2$ $f_c=66.0 Hz$	$M_{L}=0.7 M_{W}=0.8$ $f_{c}=100.0 Hz$	$M_L=1.1 M_w=1.3$ $f_c=64.9 Hz$	$M_L = 0.6 M_W = 0.6$ $f_c = 99.8 \text{ Hz}$	$-\frac{M_{L}=0.5 M_{w}=0.6}{f_{c}=97.4 \text{ Hz}}$
10 ¹⁰ -								
-012	2018173220003	2018174040400	2018174043300	2018174062000	2018174064100	2018174085934	2018174131934	2018174154112
10 ¹²	$M_L=1.1 M_W=1.2$ $f_c=52.1 Hz$		$M_{L}=0.4 M_{W}=0.5$ $f_{c}=93.2 Hz$	M_{L} =0.8 M_{W} =1.0 f_{c} =51.6 Hz	M_{L} =0.5 M_{W} =0.5 f_{C} =87.5 Hz	$M_L = 0.8 M_w = 0.9$ $f_c = 86.8 \text{ Hz}$	$M_L = 0.5 M_W = 0.7$ $f_C = 100.0 \text{ Hz}$	$M_L=0.7 M_w=0.7$ $f_C=74.0 Hz$
Ctrum WM (Nm) 10 ¹⁰ -	2018175062422	2018175071713	2018175132759	2018176001813	2018176155852	2018176170554	2018176210520	2018177104730
	M_{L} =0.5 M_{w} =0.6 f_{c} =100.0 Hz	$M_L = 0.9 M_W = 1.2$ $f_c = 64.3 \text{ Hz}$	$M_L=0.8 M_w=1.0$ $f_c=80.1 Hz$	$M_L=1.2 M_w=1.4$ $f_c=57.9 \text{ Hz}$	$M_{L}=0.9 M_{W}=1.0$ $f_{c}=61.0 \text{ Hz}$		M _L =1.5 M _w =1.6	$M_L=0.6 M_w=0.8$ $f_c=55.4 Hz$
cement s	2018178152609	2018178222942	2018179053245	2018179233042	2018180013150	2018180040100	2018180094138	2018181040940
source displacement spe	$M_{L}=1.4 M_{W}=1.6$	$M_{L}=0.8 M_{W}=1.0$ $f_{c}=58.9 \text{ Hz}$	$-\frac{M_{L}=0.8M_{W}=0.9}{f_{c}=77.1Hz}$	$M_{L}=1.0 M_{W}=1.2 f_{c}=60.5 Hz$	$M_{L}=1.1 \ M_{W}=1.3 \ f_{c}=50.7 \ Hz$	$M_L=0.8 M_w=1.0$ $f_c=59.3 Hz$	$M_L=0.9 M_W=1.0$ $f_c=77.6 \text{ Hz}$	$-\frac{M_{L}=0.7\ M_{w}=0.9}{f_{c}=65.4\ Hz}$
30 sonuc 10 ¹⁰ -	3 112			-	- 10-30.712	-0000000		
	2018181065239	2018181192300	2018182124340	2018182203248	2018182212250	2018182233301	2018183155952	2018183202531
10 ¹² -	$M_L=1.0 M_w=1.2$ $f_c=48.1 Hz$	$M_{L}=0.6 M_{W}=0.7$ $f_{c}=60.8 Hz$	$M_{L}=1.1 M_{W}=1.2 f_{c}=58.5 Hz$	M_{L} =1.2 M_{W} =1.4 f_{c} =46.2 Hz	M_{L} =0.9 M_{w} =1.1 f_{c} =60.2 Hz	$M_L=1.1 M_w=1.2$ $f_c=56.5 Hz$	$M_L=1.1 M_W=1.0$ $f_c=68.7 Hz$	$M_L=0.7 M_w=0.9$ $f_c=72.2 Hz$
10 ¹⁰ -	2018183215029	2018184003003	2018184201046	2018184202906	2018185001326	2018185014623	2018185034551	2018185120950
10 ¹² -	$M_L = 0.7 M_w = 0.9$ $f_c = 72.7 \text{ Hz}$	$M_L=0.7 M_w=0.7$ $f_c=78.0 Hz$	M _L =1.4 M _w =1.6	-	$M_L = 0.8 M_w = 0.9$ $f_C = 76.3 \text{ Hz}$	$M_L=0.9 M_w=1.0$ $f_c=67.9 \text{ Hz}$	$M_L=0.5 M_w=0.6$ $f_c=82.4 Hz$	$M_L=0.7 M_w=0.7$ $f_c=75.7 Hz$
10 ¹⁰ -			-	••••				
10 ¹² -	2018185145450 M _L =0.6 M _w =0.7	2018185155423 	2018186070100 	2018186092109 	2018186115357 	2018186131522 	2018186202646 	2018186215007
10 ¹⁰ -	f _c =77.8 Hz	f _c =90.9 Hz		f _c =55.0 Hz	f _c =47.6 Hz	48.7.Hz	f _c =61.2 Hz	f _c =84.2 Hz
	2018187034808	2018187062657	2018187084836	2018188142051	2018188161324	2018188173124	2018188175428	2018188193122
10 ¹² -	M_{L} =0.7 M_{w} =0.8 f_{c} =72.0 Hz	$M_L=0.8 M_W=1.0$ $f_c=54.5 Hz$	$M_{L}=0.7 M_{W}=0.9$ $f_{c}=51.9 Hz$	$M_{L}=0.6 M_{W}=0.8$ $f_{c}=96.1 Hz$	$M_{L}=0.7 M_{W}=0.7$ $f_{c}=90.5 Hz$	$M_L=0.6 M_w=0.7$ $f_c=80.0 Hz$	$M_L=0.4 M_w=0.6$ $f_c=90.3 Hz$	$M_L = 0.5 M_w = 0.9$ $f_c = 64.8 \text{ Hz}$
10 ¹⁰ -	2018188202905	2018188214438	2018188214700	2018188214802	2018189060720	2018189070845	2018189095118	2018189132738
10 ¹² -	M_{L} =0.8 M_{w} =0.9 f_{c} =62.3 Hz	$M_{L}=0.8 M_{w}=0.9$ $f_{c}=67.9 \text{ Hz}$	$M_{L}=0.6 M_{W}=0.8$ $f_{c}=65.9 \text{ Hz}$	$M_{L}=0.8 M_{W}=1.0$ $f_{c}=59.1 \text{ Hz}$	$M_{L}=0.6 M_{W}=0.8$ $f_{c}=83.1 Hz$	<i>f</i> _c =9.4 Hz	$M_{L}=0.5 M_{W}=0.5$ $f_{c}=89.1 Hz$	M_{L} =0.6 M_{w} =0.7 f_{c} =78.0 Hz
10 ¹⁰ -							-	-
10 ¹² -	2018189132728 M _L =1.1 M _w =1.3	2018189142028 	2018189152317 	2018189160854 M _L =1.3 M _w =1.6	2018189163251 	2018189173537 M _L =0.6 M _w =0.7	2018189195043 	2018190005253
10 ¹⁰ -	f_c =65.6 Hz	f _c =85.2 Hz	f _c =69.7 Hz	- 13. I-Hz	f _c =98.8 Hz	f _c =79.2 Hz	£ = 39 1.Hz _	f _c =71.4 Hz
	2018190020811	2018190025747	2018190155046	2018193142500	2018193204529	2018194085018	2018194133411	2018195011432
10 ¹² -	M_L =0.6 M_w =0.6 f_c =94.0 Hz	$M_L=0.9 M_w=1.1$ $f_c=52.6 Hz$	$M_L=0.5 M_w=0.6$ $f_c=100.0 Hz$	$M_L = 0.6 M_w = 0.7$ $f_c = 69.8 \text{ Hz}$	$M_L = 0.8 M_w = 0.9$ $f_c = 65.5 \text{ Hz}$	$M_L=0.8 M_w=1.0$ $f_c=57.5 Hz$		$M_L=0.7 M_w=0.9$ $f_c=82.0 Hz$
10 ¹⁰ -	2018195074501	2018195123640	2018195172331	2018195195343	2018196003937	2018196010738	2018196071020	2018196133941
10 ¹² -	M_{L} =0.7 M_{w} =0.7 f_{c} =100.0 Hz	$M_{L}=0.7 M_{W}=0.9$ $f_{c}=77.2 \text{ Hz}$	$M_{L}=0.6 M_{W}=0.5$ $f_{c}=100.0 Hz$	$M_{L}=0.6 M_{W}=0.7$ $f_{c}=83.7 Hz$	$f_c = 9.2 \text{ Hz}$	$M_L=0.9 M_w=1.1$ $f_c=68.1 Hz$	$M_{L}=0.6 M_{W}=0.7$ $f_{c}=92.5 Hz$	$M_L=1.3 M_w=1.6$
10 ¹⁰ -								-
10 ¹² -	2018196200450 M _L =0.9 M _w =1.2	2018197015541 	2018197070436 	2018197091659 M _L =0.5 M _w =0.6	2018197172535 	2018197183626 	2018199080816 	2018199104200
1010 -	M_{L} =0.9 M_{w} =1.2 f_{c} =56.6 Hz	$M_{L}=0.7 M_{W}=0.8$ $f_{c}=100.0 \text{ Hz}$	M_{L} =0.5 M_{W} =0.5 f_{c} =96.8 Hz	M_{L} =0.5 M_{W} =0.6 f_{c} =86.1 Hz	$M_{L}=1.2 \ M_{W}=1.5$ $f_{c}=40.1 \ Hz$	$M_L = 0.5 M_w = 0.7$ $f_c = 94.2 \text{ Hz}$	$M_{\rm L}$ =0.5 $M_{\rm w}$ =0.6 $f_{\rm c}$ =100.0 Hz	$M_{L}=1.0 M_{W}=1.2 f_{c}=61.5 Hz$
±∪-~ -	2018199170820	2018199170914	2018199194117	2018199204703	2018199224500	2018200015608	2018200040208	2018200082657
10 ¹² -	$M_{L}=1.1 M_{W}=1.1$ $f_{c}=60.0 Hz$	-	M_{L} =0.9 M_{w} =1.0 f_{c} =69.1 Hz	$M_L=1.2 M_W=1.5$ $f_c=56.9 Hz$	M _L =1.5 M _w =1.6	$M_L=0.6 M_w=0.6$ $f_c=100.0 Hz$	$M_L=0.7 M_w=1.0$ $f_c=63.5 Hz$	M_L =0.6 M_w =0.7 f_c =94.2 Hz
10 ¹⁰ -	2018200100833	2018200100919	2018200102006	2018200105407	2018200105452	2018200105703	2018200134612	2018200143037
10 ¹² -	$M_{L}=0.4 M_{W}=0.6$	$M_{\rm L} = 0.8 M_{\rm W} = 0.9$	-	$M_{L}=0.6 M_{W}=0.6$	$M_{L}=0.7 M_{W}=0.8$	$M_{L}=1.2 M_{W}=1.2$	$M_{L}=0.5 M_{W}=0.6$	$M_{L}=0.5 M_{W}=0.6$
10 ¹⁰ -	f _c =73.7 Hz	f _c =83.8 Hz		f _c =71.5 Hz	f _c =72.8 Hz	f _c =76.7 Hz	f _c =89.8 Hz	f _c =90.7 Hz
	2018200170651	2018200191849	2018201073346	2018201152715	2018202112855	2018202134535	2018202144515	2018202222748
10 ¹² -	M_{L} =0.5 M_{w} =0.5 f_{c} =100.0 Hz	$M_L=0.5 M_w=0.6$ $f_c=100.0 Hz$	1	$M_L=0.6 M_w=0.6$ $f_c=94.3 Hz$	$M_{L}=0.7 M_{W}=0.8$ $f_{c}=82.9 Hz$	$M_L=0.5 M_w=0.6$ $f_c=91.9 Hz$	$M_{L}=0.7 M_{W}=0.7$ $f_{c}=100.0 Hz$	$M_L=1.0 M_w=1.2$ $f_c=73.6 Hz$
10 ¹⁰ -	2018202225701	2018202234429	2018203030928	2018203081713	2018203090059	2018203113243	2018203124722	2018203171420
10 ¹² -	M_{L} =0.5 M_{w} =0.6 f_{c} =92.4 Hz	$M_{L}=1.1 M_{W}=1.2$ $f_{c}=66.0 Hz$	$M_{L}=0.7 M_{W}=0.8$ $f_{c}=82.6 Hz$	$M_{L}=0.5 M_{W}=0.6$ $f_{c}=89.4 \text{ Hz}$	$M_{L}=1.4 M_{W}=1.5$ $f_{c}=56.5 Hz$	$M_L=0.9 M_w=1.3$ $f_c=53.8 Hz$	$M_L=0.5 M_w=0.6$ $f_c=92.7 Hz$	10 100 - 28 \overline
10 ¹⁰ -	-	-				Nonescont of the second		- 28 - 14 such that is not a suc
	2018203174444	2018203230921	2018203232316	2018204160756	2018204220258	2018204234743	2018205205035	- 7 - 5
		- , ,		frequency (Hz)				