

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA

SAN FERNANDO

$\varphi = 36^\circ 27' 42''$

$\lambda = 6^\circ 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

			Componen- te.	Masa kg	Periodo s	Amplifica- ción.	Velocidad de registro. " mm	$\varepsilon$	$\frac{r}{T_0^2}$
Péndulo horizontal	Milne		E-W	»	19	7	1 4	»	»
Idem	idem	Bifilar	E-W	60	24	13	1 6	»	0,001
Idem	idem	idem	N-S	600	13	110	1 15	»	»
Idem	idem	idem	N-S	1100	30	16	1 15	»	»
Idem	vertical	Observatorio	E-W	700	2	280	1 15	»	0,061

1mm 0",40

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

Fecha	Fase	Hora h m s	Periodo	AMPLITUD		$\Delta$ km	Observaciones
				N. S. mm	E. W. mm		
Enero 2	$M_N$ $M_E$	15 38 30 15 42 00			0,30		
» 12	$M_N$ $M_E$	23 20 30 23 28 00					
» 17	L $M_N$ $M_E$	22 56 30 23 2 30 23 2 00			0,75		
» 20	i $M_N$ $M_E$	11 18 45 11 20 00 11 20 30			0,40		
» 24	P S $M_N$ $M_E$	1 26 3 1 37 43 2 48 00 2 50 00		4,00		10.850	
» 24	P	5 23 28					Réplica del anterior.
» 24	$M_N$ $M_E$	8 32 00 8 35 00			1,00		
» 25	(S) $M_N$ $M_E$	9 14 36 9 36 00 9 35 30			0,30		
» 25-26	(P) L $M_N$ $M_E$	23 42 45 0 39 30 0 55 00 0 54 00		0,50	0,60		
» 26	$M_N$ $M_E$	12 49 30 12 51 00					
» 26	$M_N$ $M_E$	17 21 00 17 19 30		0,45	0,50		
» 27	$M_N$ $M_E$	19 56 30 20 7 00					
» 29	$M_N$ $M_E$	19 33 00 19 33 00		0,35	0,65		
» 31	$M_N$ $M_E$	1 23 30 1 18 30					
» 31	$M_N$ $M_E$	6 15 00 6 16 00					

Todos los días hubo intranquilidad.

El Director,

Leon Herrero

**BOLETIN SÍSMICO**  
DEL  
**INSTITUTO Y OBSERVATORIO DE MARINA**  
~~~~~  
**SAN FERNANDO**

$\varphi = 36^{\circ} 27' 42''$

$\lambda = 6^{\circ} 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

**INSTRUMENTOS**

|                    | Componen-<br>te.      | Masa<br>kg | Periodo<br>s | Amplifica-<br>ción. | Velocidad<br>de registro. |    | $\epsilon$ | $\frac{r}{T_0^2}$ |           |
|--------------------|-----------------------|------------|--------------|---------------------|---------------------------|----|------------|-------------------|-----------|
|                    |                       |            |              |                     | m                         | mm |            |                   |           |
| Péndulo horizontal | Milne                 | E-W        | 19           | 7                   | 1                         | 4  | »          | »                 | 1mm 0",40 |
| Idem               | idem                  | Biflar     | 60           | 24                  | 1                         | 6  | »          | 0,001             |           |
| Idem               | idem                  | idem       | 600          | 13                  | 1                         | 15 | »          | »                 |           |
| Idem               | idem                  | idem       | 1100         | 30                  | 1                         | 15 | »          | »                 |           |
| Idem               | vertical Observatorio | E-W        | 700          | 2                   | 1                         | 15 | »          | 0,061             |           |

**TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL**  
(GREENWICH)

| Fecha     | Fase  | Hora     | Periodo | AMPLITUD |       | $\Delta$ | Observaciones      |
|-----------|-------|----------|---------|----------|-------|----------|--------------------|
|           |       |          |         | N. S.    | E. W. |          |                    |
|           |       |          |         | mm       | mm    | km       |                    |
| Febrero 1 | $M_N$ | 1 21. 00 |         |          |       |          |                    |
|           | $M_E$ | 1 24. 00 |         |          |       |          |                    |
| » 1       | P     | 18 16 12 |         |          |       |          |                    |
|           | (S)   | 18 29 52 |         |          |       |          |                    |
|           | L     | 19 8 30  |         |          |       |          |                    |
|           | $M_N$ | 19 26 30 |         |          |       |          |                    |
|           | $M_E$ | 19 26 00 |         |          | 0,75  | (14.700) |                    |
| » 3       | L     | 4 44 00  |         |          |       |          |                    |
|           | $M_N$ | 4 46 30  |         | 1,10     |       |          |                    |
|           | $M_E$ | 4 48 30  |         |          | 0,55  |          |                    |
| » 3       | $M_N$ | 5 45 30  |         | 0,70     |       |          |                    |
|           | $M_E$ | 5 47 00  |         |          | 0,35  |          |                    |
| » 4       | (P)   | 3 10 59  |         |          |       |          |                    |
|           | (S)   | 3 24 25  |         |          |       |          |                    |
|           | L     | 4 7 30   |         |          |       |          |                    |
|           | $M_N$ | 4 13 00  |         |          |       |          |                    |
|           | $M_E$ | 4 43 30  |         |          | 0,30  | (15.000) |                    |
| » 14      | P     | 4 48 4   |         |          |       |          |                    |
|           | S     | 4 51 42  |         |          |       |          |                    |
|           | L     | 4 53 30  |         |          |       |          |                    |
|           | $M_N$ | 4 55 30  |         | 1,50     |       |          |                    |
|           | $M_E$ | 4 55 00  |         |          | 0,60  | 2.180    |                    |
| » 16      | P     | 1 48 48  |         |          |       |          |                    |
|           | S     | 1 59 27  |         |          |       |          |                    |
|           | L     | 2 23 00  |         |          |       |          |                    |
|           | $M_N$ | 2 38 30  |         | 2,75     |       |          |                    |
|           | $M_E$ | 2 35 30  |         |          | 5,10  | 9.550    |                    |
| » 16      | $M_N$ | 9 38 30  |         |          |       |          |                    |
|           | $M_E$ | 9 39 30  |         |          |       |          |                    |
| » 16      | $M_N$ | 12 54 00 |         | 0,35     |       |          |                    |
|           | $M_E$ | 12 53 00 |         |          | 0,30  |          |                    |
| » 18-19   | $M_N$ | 0 16 00  |         |          |       |          |                    |
| » 19      | $M_N$ | 4 55 30  |         |          |       |          |                    |
| » 21      | $M_N$ | 13 48 00 |         |          |       |          |                    |
| » 24      | (S)   | 16 28 00 |         |          |       |          |                    |
|           | L     | 17 10 00 |         |          |       |          |                    |
|           | $M_N$ | 17 14 00 |         |          |       |          |                    |
| » 25      | L     | 3 29 00  |         |          |       |          |                    |
|           | $M_N$ | 3 32 00  |         |          |       |          |                    |
| » 28      | (P)   | 4 24 12  |         |          |       |          | Terremoto cercano. |
| » 28      | (P)   | 14 18 00 |         |          |       |          |                    |
|           | (S)   | 14 31 30 |         |          |       |          |                    |
|           | L     | 14 53 00 |         |          |       |          |                    |
|           | $M_N$ | 15 1 00  |         |          |       |          |                    |
|           | $M_E$ | 14 58 00 |         |          |       | (13.000) |                    |

Todos los días hubo intranquilidad.

El Director,

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
~~~~~  
SAN FERNANDO

 $\varphi = 36^{\circ} 27' 42''$ 
 $\lambda = 6^{\circ} 12' 20'' W$ 
 $a = 28^m$ 

Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

	Componen- te.	Masa kg	Periodo s	Amplifica- ción.	Velocidad de registro.		$\epsilon$	$\frac{r}{T_0^2}$	
					m	mm			
Péndulo horizontal	Milne	E-W	19	7	1	4	»	»	1mm 0",40
Idem	idem	Bifilar	60	24	1	6	»	0,001	
Idem	idem	idem	600	13	1	15	»	»	
Idem	idem	idem	1100	30	1	15	»	»	
Idem	vertical Observatorio	E-W	700	2	1	15	»	0,061	

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

Fecha	Fase	Hora h m s	Periodo	AMPLITUD		$\Delta$ km	Observaciones
				N. S.	E. W.		
				mm	mm		
Marzo 3	(P)	1 26 00				(13.400)	
	(S)	1 39 05					
	SR	1 46 17					
	L	2 5 00					
	M <sub>N</sub>	2 22 00	1,25				
	M <sub>E</sub>	2 14 00					
» 3	L	17 41 30					
	M <sub>N</sub>	17 49 00	0,40				
» 6	L	1 49 00					
	M <sub>N</sub>	1 51 00	0,15				
» 7	PR	9 45 20					A las 10 <sup>h</sup> -24 <sup>m</sup> saltó la pluma del de 25 <sup>s</sup> E-W; a las 10-35, id. id. la del de 13 <sup>s</sup> N-S.
	S	9 52 00					
	L	10 8 00					
	M <sub>N</sub>	10 25 00					
» 9	(S)	16 36 35					
	M <sub>N</sub>	16 48 30					
» 12	(S)	19 14 30					
	M <sub>N</sub>	19 52 30	0,25				
	M <sub>E</sub>	19 56 30		0,20			
» 12	(S)	20 40 26					
	M <sub>N</sub>	20 41 00					
» 13	M <sub>N</sub>	6 27 00					
	M <sub>E</sub>	6 33 30		0,15			
» 14	P	0 0 42				120	
	S	0 0 55					
» 14	P	1 2 09				120	Réplica del anterior.
	S	1 2 22					
» 14	L	18 26 00					
	M <sub>N</sub>	18 31 30					
	M <sub>E</sub>	18 31 30					
» 15	M <sub>N</sub>	22 41 30					
	M <sub>E</sub>	22 40 00					
» 16	M <sub>N</sub>	7 55 00					
	M <sub>E</sub>	7 55 00					
» 20	M <sub>N</sub>	17 13 00					
	M <sub>E</sub>	17 21 30					
» 21	M <sub>N</sub>	10 55 00					
	M <sub>E</sub>	11 4 00					
» 21	(P)	15 18 53					
	S	15 29 25					
	L	15 47 30					
	M <sub>N</sub>	15 50 30	1,40				
	M <sub>E</sub>	16 3 30		3,50	9.500		
» 22	M <sub>N</sub>	1 59 30					
	M <sub>E</sub>	1 59 30					
» 22	M <sub>N</sub>	8 58 00					
	M <sub>E</sub>	8 57 30					
» 23	M <sub>N</sub>	11 9 30					
	M <sub>E</sub>	11 12 00		0,25			
» 24	M <sub>N</sub>	12 45 30					
	M <sub>E</sub>	12 47 00					

Fecha	Fase	Hora	Periodo	AMPLITUD		$\Delta$	Observaciones
				N. S.	E. W.		
Marzo 24	M <sub>N</sub>	h m s 15 11 00		mm	mm	km	
	M <sub>E</sub>	15 11 00					
» 25	M <sub>N</sub>	4 1 30		0,50			
	M <sub>E</sub>	4 3 30			0,50		
» 25	(S)	13 18 18					
	L	13 40 00					
	M <sub>N</sub>	13 47 00		0,55			
	M <sub>E</sub>	13 48 00			0,55		
» 30	M <sub>N</sub>	7 53 30					
	M <sub>E</sub>	7 51 00					
» 30	M <sub>N</sub>	15 18 00					
	M <sub>E</sub>	15 24 00			0,25		
» 31	M <sub>N</sub>	22 6 00					
	M <sub>E</sub>	22 6 00			0,30		

Todos los días hubo intranquilidad.

El Director,



*Leon Herrera*

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
SAN FERNANDO



$\varphi = 36^\circ 27' 42''$        $\lambda = 6^\circ 12' 20'' W$        $a = 28^m$       Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

	Componen- te.	Masa kg	Periodo s	Amplifica- ción.	Velocidad de registro.		$\epsilon$	$\frac{r}{T_0^2}$
					m	mm		
Péndulo horizontal	Milne	E-W	19	7	1	4	»	»
Idem	idem	Bifilar	60	24	1	6	»	0,001
Idem	idem	idem	600	13	1	15	»	»
Idem	idem	idem	1100	30	1	15	»	»
Idem	vertical Observatorio	E-W	700	2	1	15	»	0,061

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

Fecha	Fase	Hora	Periodo	AMPLITUD		$\Delta$	Observaciones
				N. S.	E. W.		
		h m s		mm	mm	km	
Abril 1	(P)	19 26 16					
	(?)	19 26 34					
	i (S)	19 36 18					
	i	19 40 36					
	M <sub>N</sub>	19 42 00		0,40			
	M <sub>E</sub>	19 42 30			0,25		
	F	22 0 00					
» 11	M <sub>N</sub>	22 54 00					
	M <sub>E</sub>	23 2 30			0,30		
» 13	M <sub>E</sub>	1 5 30					
» 13	(S)	14 13 26					
	L	14 42 00					
	M <sub>N</sub>	14 51 30		0,30			
	M <sub>E</sub>	14 52 30			0,50		
» 14	P	6 36 38					
	i S	6 46 58					
	L	7 1 00					
	M <sub>N</sub>	7 9 00		1,50			
	M <sub>E</sub>	7 2 00			1,60		
	F	11 0 00				9,180	
» 16	(P)	8 25 12					
	(PR)	8 30 29					
	S	8 38 54					
	L	9 1 30					
	M <sub>N</sub>	9 18 00		0,65			
	M <sub>E</sub>	9 19 00			2,90	(12,720)	
» 19	(P)	17 45 50					
	(S)	17 59 9					
	L	18 28 30					
	M <sub>N</sub>	18 35 30		0,55			
	M <sub>E</sub>	18 34 00			0,65		
	F	21 0 00				(13,000)	
» 27	M <sub>N</sub>	4 28 00					
	M <sub>E</sub>	4 30 30					
» 27	(L)	20 14 00					
	M <sub>N</sub>	20 30 00					
	M <sub>E</sub>	20 34 00			0,20		
» 30	L	14 31 00					
	M <sub>N</sub>	14 36 00		0,50			
	M <sub>E</sub>	14 38 30			0,65		

Todos los días hubo intranquilidad.



El Director,

*Leon Herrera*

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
SAN FERNANDO



$\varphi = 36^{\circ} 27' 42''$

$\lambda = 6^{\circ} 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

			Componen- te.	Masa kg	Periodo s	Amplifica- ción.	Velocidad de registro. m mm	$\epsilon$	$\frac{r}{T_0^2}$
Péndulo horizontal	Milne		E-W	»	19	7	1 4	»	»
Idem	idem	Biflar	E-W	60	24	13	1 6	»	0,001
Idem	idem	idem	N-S	600	13	110	1 15	»	»
Idem	idem	idem	N-S	1100	30	16	1 15	»	»
Idem	vertical Observatorio		E-W	700	2	280	1 15	»	0,061

1mm 0",40

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

Fecha	Fase	Hora h m s	Periodo	AMPLITUD		$\Delta$ km	Observaciones
				N. S. mm	E. W. mm		
Mayo 4	$M_N$	15 8 00					
	$M_E$	15 13 30					
» 8	P	0 44 31				< 100	
» 9	(S)	10 48 36					
	L	10 58 30					
	$M_N$	11 0 00		0,40			
» 9	L	20 43 30					
	$M_N$	20 56 00		0,30			
	F	23 0 00					
» 10	L	7 1 30					
	$M_N$	7 3 00					
» 13-4	L	0 18 30					
	$M_N$	0 26 00					
	$M_E$	0 26 00					
» 15	P	2 52 09					
	S	2 56 11					
	L	2 59 00					
	$M_N$	3 0 00		2,50			
	$M_E$	3 1 30			1,30		
	F	4 29 00				2,450	
» 16	$M_N$	13 9 30					
	$M_E$	13 5 30					
» 18	P	1 43 16					
	S	1 43 43				250	
» 21	L	17 38 00					
	$M_N$	17 48 00					
	$M_E$	17 46 00					
» 22	P	22 45 05					
	S	22 55 10					
	L	23 10 30					
	$M_N$	23 34 00		14,50		8,900	
	F	28 45 00					
» 23	$M_E$	14 40 00					
» 23-24	$M_N$ (1)	23 17 00					
	$M_E$ (2)	0 32 30					

A las 23<sup>h</sup> 21<sup>m</sup> y 23<sup>h</sup> 24<sup>m</sup> saltaron las plumas de los de 30<sup>s</sup> y 13<sup>s</sup> respectivamente.

Todos los días hubo intranquilidad.



El Director,

*San Fernando*

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
SAN FERNANDO



$\varphi = 36^\circ 27' 42''$

$\lambda = 6^\circ 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

	Componen- te.	Masa kg	Periodo s	Amplifica- ción.	Velocidad de registro.		$\epsilon$	$\frac{r}{T_0^2}$
					m	mm		
Péndulo horizontal	Milne	E-W	19	7	1	4	»	»
Idem	idem	Bifilar	60	24	1	6	»	0,001
Idem	idem	idem	600	13	1	15	»	»
Idem	idem	idem	1100	30	1	15	»	»
Idem	vertical Observatorio	E-W	700	2	1	15	»	0,061

1mm 0",40

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

Fecha	Fase	Hora	Periodo	AMPLITUD		$\Delta$	Observaciones
				N. S.	E. W.		
Junio 3	P	h m s 7 31 24		mm	mm	km	Parecen dos terremotos en sucesión rápida, haciendo los gráficos indecifrables.
	M <sub>N</sub>	8 30 00		0,50			
	M <sub>E</sub>	8 45 30			2,25		
» 6	(PR)	18 44 36		0,55	0,35		
	S	18 55 42					
	L	19 49 30					
	M <sub>N</sub>	20 7 00					
	M <sub>E</sub>	20 8 00					
» 14	L	18 33 00		0,75	1,60		
	M <sub>N</sub>	18 41 00					
	M <sub>E</sub>	18 45 00					
	F	20 0 00					
» 20	M <sub>N</sub>	15 19 00			0,30		
	M <sub>E</sub>	15 16 00					
» 26	(S)	11 31 19			1,25		
	L	11 38 30					
	M <sub>E</sub>	11 42 00					
» 30	M <sub>N</sub>	23 14 00					
	M <sub>E</sub>	23 15 00					

Todos los días hubo intranquilidad.



El Director,

*Leon Herrera*

**BOLETIN SÍSMICO**  
DEL  
**INSTITUTO Y OBSERVATORIO DE MARINA**  
~~~~~  
**SAN FERNANDO**

$\varphi = 36^{\circ} 27' 42''$

$\lambda = 6^{\circ} 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

**INSTRUMENTOS**

|                    | Componen-<br>te.      | Masa<br>kg | Periodo<br>s | Amplifica-<br>ción. | Velocidad<br>de registro. |    | $\epsilon$ | $\frac{r}{T_0^2}$ |  |
|--------------------|-----------------------|------------|--------------|---------------------|---------------------------|----|------------|-------------------|--|
|                    |                       |            |              |                     | m                         | mm |            |                   |  |
| Péndulo horizontal | Milne                 | E-W        | 19           | 7                   | I 4                       | »  | »          | 1mm 0",40         |  |
| Idem               | idem                  | Bifilar    | 60           | 24                  | I 6                       | »  | 0,001      |                   |  |
| Idem               | idem                  | idem       | 600          | 13                  | I 15                      | »  | »          |                   |  |
| Idem               | idem                  | idem       | 1100         | 30                  | I 15                      | »  | »          |                   |  |
| Idem               | vertical Observatorio | E-W        | 700          | 2                   | I 15                      | »  | 0,061      |                   |  |

**TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL**  
(GREENWICH)

| Fecha   | Fase           | Hora<br>h m s | Periodo | AMPLITUD    |             | $\Delta$<br>km | Observaciones |
|---------|----------------|---------------|---------|-------------|-------------|----------------|---------------|
|         |                |               |         | N. S.<br>mm | E. W.<br>mm |                |               |
| Julio 1 | P              | 8 24 05       |         |             |             |                |               |
|         | S              | 8 28 05       |         |             |             |                |               |
|         | M <sub>N</sub> | 8 29 00       |         |             |             |                |               |
|         | M <sub>E</sub> | 8 31 00       |         |             |             |                |               |
|         | F              | 10 43 00      |         |             |             |                |               |
| » 10    | M <sub>N</sub> | 5 36 00       |         |             |             |                |               |
|         | M <sub>E</sub> | 5 52 00       |         |             |             |                |               |
| » 11    | M <sub>N</sub> | 9 9 30        |         | 0,35        |             |                |               |
|         | M <sub>E</sub> | 9 5 30        |         |             |             |                |               |
| » 11    | (P)            | 13 11 06      |         |             |             |                |               |
|         | (S)            | 13 16 22      |         |             |             |                |               |
|         | L              | 13 25 30      |         |             |             |                |               |
|         | M <sub>N</sub> | 13 29 00      |         |             |             |                |               |
|         | M <sub>E</sub> | 13 29 30      |         |             |             |                |               |
|         | F              | 14 20 00      |         |             |             |                |               |
| » 12    | i S            | 21 31 46      |         |             |             |                |               |
|         | L              | 21 58 30      |         |             |             |                |               |
|         | M <sub>N</sub> | 22 2 30       |         |             |             |                |               |
|         | M <sub>E</sub> | 22 7 00       |         |             |             |                |               |
| » 14-15 | i (S)          | 23 50 42      |         |             |             |                |               |
|         | L              | 0 15 00       |         |             |             |                |               |
|         | M <sub>N</sub> | 0 19 30       |         |             |             |                |               |
|         | M <sub>E</sub> | 0 23 30       |         |             |             |                |               |
| » 18    | (P)            | 11 40 10      |         |             |             |                |               |
|         | (S)            | 11 52 27      |         |             |             |                |               |
|         | L              | 12 45 30      |         |             |             |                |               |
|         | M <sub>E</sub> | 12 57 00      |         |             |             |                |               |
|         | M <sub>N</sub> | 13 1 00       |         |             |             |                |               |
|         |                |               |         |             |             |                |               |
| » 22    | S              | 4 10 50       |         |             |             |                |               |
|         | L              | 4 18 30       |         |             |             |                |               |
|         | M <sub>N</sub> | 4 23 30       |         |             |             |                |               |
|         | M <sub>E</sub> | 4 27 0        |         |             |             |                |               |
| » 23    | L              | 20 42 30      |         |             |             |                |               |
|         | M <sub>N</sub> | 20 46 30      |         |             |             |                |               |
|         | M <sub>E</sub> | 20 49 0       |         |             |             |                |               |
| » 23    | L              | 23 7 30       |         |             |             |                |               |
|         | M <sub>N</sub> | 23 9 00       |         |             |             |                |               |
|         | M <sub>E</sub> | 23 11 00      |         |             |             |                |               |
| » 28    | (P)            | 16 30 22      |         |             |             |                |               |
|         | (S)            | 16 40 50      |         |             |             |                |               |
|         | L              | 17 3 30       |         |             |             |                |               |
|         | M <sub>N</sub> | 17 10 30      |         |             |             |                |               |
|         | M <sub>E</sub> | 17 11 00      |         |             |             |                |               |
|         |                |               |         |             |             |                |               |
| » 29    | M <sub>N</sub> | 0 58 30       |         |             |             |                |               |
|         | M <sub>E</sub> | 1 3 0         |         |             |             |                |               |
| » 30    | M <sub>N</sub> | 15 22 30      |         | 0,35        |             |                |               |
|         | M <sub>E</sub> | 15 26 00      |         |             |             |                |               |

Todos los días hubo intranquilidad.



El Director,

*Leon Ferrer*

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
~~~~~  
SAN FERNANDO

$\varphi = 36^{\circ} 27' 42''$

$\lambda = 6^{\circ} 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

			Componente.	Masa	Periodo	Amplificación.	Velocidad de registro.	$\epsilon$	$\frac{r}{T_0^2}$
				kg	s		m mm		
Péndulo horizontal	Milne		E-W	»	19	7	1 4	»	»
Idem	idem	Bifilar	E-W	60	24	13	1 6	»	0,001
Idem	idem	idem	N-S	600	13	110	1 15	»	»
Idem	idem	idem	N-S	1100	30	16	1 15	»	»
Idem	vertical	Observatorio	E-W	700	2	280	1 15	»	0,061

1mm 0",40

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

Fecha	Fase	Hora	Periodo	AMPLITUD		$\Delta$	Observaciones
				N. S.	E. W.		
		h m s		mm	mm	km	
Agosto 1	i S	11 50 43					
» 1	L	17 59 00					
	M <sub>N</sub>	18 9 00		0,25			
	M <sub>E</sub>	18 10 30			0,70		
» 1	L	19 38 30					
	M <sub>N</sub>	19 46 30		0,40			
	M <sub>E</sub>	19 51 30			0,60		
» 2	M <sub>N</sub>	1 25 00					
	M <sub>E</sub>	1 23 00					
» 3	M <sub>N</sub>	7 23 00					
	M <sub>E</sub>	7 33 00					
» 5	i P	21 26 15					
	PR	21 30 48					
	i S	21 37 14					
	SR	21 41 40					
	L	21 52 30					
	M <sub>N</sub>	22 15 00		5,35			
	M <sub>E</sub>	22 15 00			4,05	10,050	
» 6	(S)	0 37 18					
	L	1 00 00					
	M <sub>N</sub>	1 5 30		0,85			
	M <sub>E</sub>	1 6 00			1,10		
» 7	M <sub>N</sub>	6 46 00					
	M <sub>E</sub>	6 47 30					
» 8	(S)	1 21 26					
	M <sub>N</sub>	1 58 30					
	M <sub>E</sub>	1 54 30					
» 9	M <sub>N</sub>	2 3 00					
	M <sub>E</sub>	2 10 00					
» 10	P	1 47 22					
	S	1 56 54					
	L	2 10 30					
	M <sub>N</sub>	2 27 00		0,65			
	M <sub>E</sub>	2 29 30			1,05		
	F	5 30 00				8,200	
» 10	P	11 55 46					
	(PR)	11 57 13					
	(S)	12 7 28					
	i S R	12 14 29					
	L	12 28 30					
	M <sub>N</sub>	12 51 30		2,25			
	M <sub>E</sub>	12 48 30			3,50		
	F	16 15 00				(11,000)	
» 10	M <sub>N</sub>	22 21 30					
	M <sub>E</sub>	22 19 00					

Fecha	Fase	Hora	Periodo	AMPLITUD		$\Delta$	Observaciones
				N. S.	E. W.		
		h m s		mm	mm	km	
Agosto 12	P	10 33 39					
» 16	M <sub>N</sub>	22 6 30					
	M <sub>E</sub>	22 10 00					
» 18	(PR)	19 49 19					
	(S)	19 52 46					
	(SR)	20 5 20					
	L	20 22 00					
	M <sub>N</sub>	20 35 00		3,40			
	M <sub>E</sub>	20 28 30			3,80		
	F	24 0 00					
» 20	M <sub>N</sub>	0 25 00					
	M <sub>E</sub>	0 18 00					
» 20	M <sub>N</sub>	22 37 30		0,15			
	M <sub>E</sub>	22 38 00			0,65		
» 21	P	0 6 23					
	S	0 16 2					
	L	0 30 30					
	M <sub>N</sub>	0 38 30		0,75			
	M <sub>E</sub>	0 45 30			1,25		
	F	4 0 00				8,400	
» 22	M <sub>N</sub>	19 41 00		0,20			
	M <sub>E</sub>	19 45 30			0,35		
» 23	L	7 28 30					
	M <sub>N</sub>	7 37 00		0,80			
	M <sub>E</sub>	7 31 00			0,90		
» 24	M <sub>N</sub>	10 3 00		0,35			
	M <sub>E</sub>	10 0 00			0,45		
» 24	M <sub>N</sub>	16 25 00					
	M <sub>E</sub>	16 20 00					
» 24	(S)	18 33 30					
	L	19 7 00					
	M <sub>N</sub>	19 15 30		0,65			
	M <sub>E</sub>	19 18 00			0,75		
	F	22 0 00					
» 27	M <sub>N</sub>	13 16 00					
	M <sub>E</sub>	13 11 00					
» 29	M <sub>N</sub>	6 41 00					
	M <sub>E</sub>	6 48 00					
» 29	M <sub>N</sub>	8 46 00		0,25			
	M <sub>E</sub>	8 50 30			0,30		

Todos los días hubo intranquilidad.



El Director,

*Leon Herrera*

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
~~~~~  
SAN FERNANDO

 $\varphi = 36^{\circ} 27' 42''$ 
 $\lambda = 6^{\circ} 12' 20'' W$ 
 $a = 28^m$ 

Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

|                    | Componen-<br>te.      | Masa   | Periodo | Amplifica-<br>ción. | Velocidad<br>de registro. |    | $\epsilon$ | $\frac{r}{T_0^2}$ |           |
|--------------------|-----------------------|--------|---------|---------------------|---------------------------|----|------------|-------------------|-----------|
|                    |                       | kg     | s       |                     | m                         | mm |            |                   |           |
| Péndulo horizontal | Milne                 | E-W    | 19      | 7                   | 1                         | 4  | »          | »                 | 1mm 0",40 |
| Idem               | idem                  | Biflar | E-W     | 60                  | 13                        | 6  | »          | 0,001             |           |
| Idem               | idem                  | idem   | N-S     | 600                 | 13                        | 15 | »          | »                 |           |
| Idem               | idem                  | idem   | N-S     | 1100                | 30                        | 15 | »          | »                 |           |
| Idem               | vertical Observatorio | E-W    | 700     | 2                   | 1                         | 15 | »          | 0,061             |           |

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

| Fecha    | Fase                                                   | Hora                                                                | Periodo | AMPLITUD |       | $\Delta$ | Observaciones         |
|----------|--------------------------------------------------------|---------------------------------------------------------------------|---------|----------|-------|----------|-----------------------|
|          |                                                        |                                                                     |         | N. S.    | E. W. |          |                       |
|          |                                                        | h m s                                                               |         | mm       | mm    | km       |                       |
| Sept.º 1 | M <sub>N</sub><br>M <sub>E</sub>                       | 23 15 30<br>23 17 30                                                |         |          | 0,30  |          |                       |
| » 3      | P<br>i S<br>L<br>M <sub>N</sub><br>M <sub>E</sub>      | 19 55 41<br>20 2 8<br>20 7 30<br>20 14 0<br>20 15 0                 |         | 2,75     | 5,00  | 4,700    |                       |
| » 5      | M <sub>N</sub><br>M <sub>E</sub>                       | 1 50 30<br>1 56 0                                                   |         |          | 0,30  |          |                       |
| » 7      | L<br>M <sub>N</sub><br>M <sub>E</sub><br>F             | 21 22 30<br>21 25 30<br>21 31 0<br>22 35 0                          |         | 0,45     | 0,55  |          |                       |
| » 8      | (P)<br>S<br>M <sub>N</sub><br>M <sub>E</sub>           | 8 53 32<br>8 53 59<br>8 55 30<br>8 55 30                            |         |          | 1,10  | 250      | Sentido en Alhucemas. |
| » 8      | M <sub>N</sub><br>M <sub>E</sub>                       | 18 40 0<br>18 43 0                                                  |         |          |       |          |                       |
| » 10     | M <sub>N</sub><br>M <sub>E</sub>                       | 4 29 30<br>4 40 0                                                   |         |          |       |          |                       |
| » 10     | M <sub>N</sub><br>M <sub>E</sub>                       | 17 22 30<br>17 26 30                                                |         | 0,25     | 0,90  |          |                       |
| » 11     | (P)<br>P<br>S<br>L<br>M <sub>N</sub><br>M <sub>E</sub> | 22 22 15<br>22 22 21<br>22 27 25<br>22 30 0<br>22 34 30<br>22 34 30 |         | 10,00    | 5,55  | 3,300    |                       |
| » 12     | (P)<br>S<br>L<br>M <sub>N</sub><br>M <sub>E</sub>      | 3 27 17<br>3 33 45<br>3 37 30<br>3 39 0<br>3 38 30                  |         | 0,75     | 0,60  | (4,750)  |                       |
| » 12     | M <sub>N</sub><br>M <sub>E</sub>                       | 6 53 0<br>6 53 0                                                    |         | 0,25     |       |          |                       |
| » 12     | S<br>L<br>M <sub>N</sub><br>M <sub>E</sub>             | 14 35 33<br>14 41 30<br>14 43 30<br>14 46 30                        |         | 0,80     | 0,65  |          |                       |
| » 12     | (P)<br>i S                                             | 16 50 4<br>16 50 28                                                 |         |          |       | (240)    |                       |
| » 13     | L<br>M <sub>N</sub><br>M <sub>E</sub>                  | 11 47 0<br>11 52 30<br>12 5 30                                      |         | 0,30     | 0,50  |          |                       |
| » 16     | M <sub>N</sub><br>M <sub>E</sub>                       | 16 48 0<br>16 49 0                                                  |         |          |       |          |                       |

| Fecha                 | Fase           | Hora     | Periodo | AMPLITUD |       | $\Delta$ | Observaciones |
|-----------------------|----------------|----------|---------|----------|-------|----------|---------------|
|                       |                |          |         | N. S.    | E. W. |          |               |
| Sept. <sup>e</sup> 23 | e P            | h m s    |         | mm       | mm    | km       |               |
|                       | S              | 14 5 11  |         |          |       |          |               |
|                       | (L)            | 14 14 3  |         |          |       |          |               |
|                       | M <sub>N</sub> | 14 24 0  |         | 0,45     |       |          |               |
|                       | M <sub>E</sub> | 14 34 30 |         |          | 0,65  |          |               |
|                       | F              | 16 10 0  |         |          | 7,450 |          |               |
| » 24                  | (P)            | 6 20 46  |         |          |       |          |               |
|                       | (S)            | 6 26 49  |         |          |       |          |               |
|                       | M <sub>N</sub> | 6 34 0   |         | 0,40     |       |          |               |
|                       | M <sub>E</sub> | 6 40 30  |         |          | 0,45  | (4,300)  |               |
| » 24                  | M <sub>N</sub> | 18 39 30 |         |          |       |          |               |
|                       | M <sub>E</sub> | 18 40 0  |         |          | 0,30  |          |               |
| » 30                  | (P)            | 6 43 26  |         |          |       |          |               |
| » 30                  | M <sub>N</sub> | 8 41 30  |         | 0,35     |       |          |               |
|                       | M <sub>E</sub> | 8 38 0   |         |          | 0,35  |          |               |

Todos los días hubo intranquilidad.



El Director,

*Leon Herrera*

**BOLETIN SÍSMICO**  
**DEL**  
**INSTITUTO Y OBSERVATORIO DE MARINA**  
**SAN FERNANDO**

$\varphi = 36^{\circ} 27' 42''$

$\lambda = 6^{\circ} 12' 20'' W$

$a = 28^m$

Subsuelo: ROCA CALCÁREA.

**INSTRUMENTOS**

|                    |          |              | Componen-<br>te. | Masa | Periodo | Amplifica-<br>ción. | Velocidad<br>de registro. | $\epsilon$ | $\frac{r}{T_0^2}$ |
|--------------------|----------|--------------|------------------|------|---------|---------------------|---------------------------|------------|-------------------|
|                    |          |              |                  | kg   | s       |                     | m mm                      |            |                   |
| Péndulo horizontal | Milne    |              | E-W              | »    | 19      | 7                   | 1 4                       | »          | »                 |
| Idem               | idem     | Bifilar      | E-W              | 60   | 24      | 13                  | 1 6                       | »          | 0,001             |
| Idem               | idem     | idem         | N-S              | 600  | 13      | 110                 | 1 15                      | »          | »                 |
| Idem               | idem     | idem         | N-S              | 1100 | 30      | 16                  | 1 15                      | »          | »                 |
| Idem               | vertical | Observatorio | E-W              | 700  | 2       | 280                 | 1 15                      | »          | 0,061             |

1mm 0",40

**TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL**  
**(GREENWICH)**

| Fecha     | Fase           | Hora     | Periodo | AMPLITUD |       | $\Delta$ | Observaciones |
|-----------|----------------|----------|---------|----------|-------|----------|---------------|
|           |                |          |         | N. S.    | E. W. |          |               |
|           |                | h m s    |         | mm       | mm    | km       |               |
| Octubre 1 | M <sub>N</sub> | 1 19 30  |         |          |       |          |               |
|           | M <sub>E</sub> | 1 32 30  |         |          |       |          |               |
| 2         | L              | 5 25 0   |         |          |       |          |               |
|           | M <sub>N</sub> | 5 34 30  |         |          |       |          |               |
| » 2       | M <sub>E</sub> | 5 35 0   |         |          |       |          |               |
|           | M <sub>N</sub> | 21 45 30 |         |          |       |          |               |
| » 4       | M <sub>E</sub> | 21 47 30 |         |          |       |          |               |
|           | M <sub>N</sub> | 0 18 0   |         |          |       |          |               |
| » 4       | M <sub>E</sub> | 0 20 0   |         |          |       |          |               |
|           | M <sub>N</sub> | 21 58 30 |         |          |       |          |               |
| » 5       | M <sub>E</sub> | 22 3 0   |         |          | 0,35  |          |               |
|           | (S)            | 8 16 35  |         |          |       |          |               |
| » 8       | M <sub>N</sub> | 8 43 30  |         | 0,40     |       |          |               |
|           | M <sub>E</sub> | 8 45 30  |         |          | 0,50  |          |               |
| » 11      | M <sub>N</sub> | 13 36 30 |         |          |       |          |               |
|           | M <sub>E</sub> | 13 35 30 |         |          |       |          |               |
| » 11      | M <sub>N</sub> | 0 51 30  |         |          |       |          |               |
|           | M <sub>E</sub> | 0 56 30  |         |          |       |          |               |
| » 11      | M <sub>N</sub> | 14 54 30 |         |          |       |          |               |
|           | M <sub>E</sub> | 14 55 0  |         |          |       |          |               |
| » 11      | M <sub>N</sub> | 18 46 30 |         |          |       |          |               |
|           | M <sub>E</sub> | 18 47 30 |         |          |       |          |               |
| » 12      | M <sub>N</sub> | 8 55 0   |         |          |       |          |               |
|           | M <sub>E</sub> | 8 56 0   |         |          |       |          |               |
| » 15      | M <sub>N</sub> | 11 54 0  |         | 0,30     |       |          |               |
|           | M <sub>E</sub> | 11 56 30 |         |          | 0,55  |          |               |
| » 16      | L              | 15 4 30  |         |          |       |          |               |
|           | M <sub>N</sub> | 15 7 0   |         | 0,55     |       |          |               |
| » 19      | M <sub>E</sub> | 15 7 0   |         |          | 0,90  |          |               |
|           | M <sub>N</sub> | 14 45 0  |         |          |       |          |               |
| » 19      | M <sub>E</sub> | 14 47 30 |         |          | 0,65  |          |               |
|           | M <sub>N</sub> | 23 20 0  |         |          |       |          |               |
| » 24      | M <sub>E</sub> | 23 25 0  |         |          | 0,40  |          |               |
|           | P              | 16 11 52 |         |          |       |          |               |
| » 27      | i S            | 16 21 47 |         |          |       |          |               |
|           | L              | 16 30 30 |         |          |       |          |               |
| » 27      | M <sub>N</sub> | 16 44 0  |         | 11,50    |       |          |               |
|           | M <sub>E</sub> | 16 45 0  |         |          | 9,50  | 8,700    |               |
| » 27      | M <sub>N</sub> | 9 3 0    |         |          |       |          |               |
|           | M <sub>E</sub> | 9 11 0   |         |          |       |          |               |
| » 27      | M <sub>N</sub> | 20 54 0  |         |          |       |          |               |
|           | M <sub>E</sub> | 16 31 0  |         |          |       |          |               |
| » 28      | M <sub>N</sub> | 16 29 30 |         |          |       |          |               |
|           | M <sub>E</sub> | 3 20 0   |         |          |       |          |               |
| » 30      | M <sub>N</sub> | 3 28 0   |         |          |       |          |               |
|           | M <sub>E</sub> |          |         |          |       |          |               |

Todos los días hubo intranquilidad.



El Director,

*Leon Herrera*

BOLETIN SÍSMICO  
DEL  
INSTITUTO Y OBSERVATORIO DE MARINA  
SAN FERNANDO

$\varphi = 36^{\circ} 27' 42''$        $\lambda = 6^{\circ} 12' 20'' W$        $a = 28^m$       Subsuelo: ROCA CALCÁREA.

INSTRUMENTOS

|                    | Componen-<br>te.      | Masa<br>kg | Periodo<br>s | Amplifica-<br>ción. | Velocidad<br>de registro. |    | $\epsilon$ | $\frac{r}{T_0^2}$ |           |
|--------------------|-----------------------|------------|--------------|---------------------|---------------------------|----|------------|-------------------|-----------|
|                    |                       |            |              |                     | m                         | mm |            |                   |           |
| Péndulo horizontal | Milne                 | »          | 19           | 7                   | 1                         | 4  | »          | »                 | Imm 0",40 |
| Idem               | idem                  | 60         | 24           | 13                  | 1                         | 6  | »          | 0,001             |           |
| Idem               | idem                  | 600        | 13           | 110                 | 1                         | 15 | »          | »                 |           |
| Idem               | idem                  | 1100       | 30           | 16                  | 1                         | 15 | »          | »                 |           |
| Idem               | vertical Observatorio | 700        | 2            | 280                 | 1                         | 15 | »          | 0,061             |           |

TIEMPO MEDIO CIVIL DE EUROPA OCCIDENTAL  
(GREENWICH)

| Fecha   | Fase                                              | Hora                                                   | Periodo | AMPLITUD |       | $\Delta$ | Observaciones |
|---------|---------------------------------------------------|--------------------------------------------------------|---------|----------|-------|----------|---------------|
|         |                                                   |                                                        |         | N. S.    | E. W. |          |               |
|         |                                                   | h m s                                                  |         | mm       | mm    | km       |               |
| Dic.º 1 | P<br>(S)                                          | 10 10 16<br>10 10 46                                   |         |          |       | 250      |               |
| » 5     | M <sub>N</sub><br>M <sub>E</sub>                  | 18 46 0<br>18 50 30                                    |         | 0,40     | 0,45  |          |               |
| » 11    | M <sub>N</sub><br>M <sub>E</sub>                  | 17 9 00<br>17 9 30                                     |         | 0,30     | 0,40  |          |               |
| » 12    | M <sub>N</sub><br>M <sub>E</sub>                  | 15 20 30<br>15 20 00                                   |         | 0,10     | 0,25  |          |               |
| » 17    | M <sub>N</sub><br>M <sub>E</sub>                  | 8 24 40<br>8 24 30                                     |         | 0,05     | 0,10  |          |               |
| » 17    | M <sub>N</sub><br>M <sub>E</sub>                  | 20 4 0<br>20 4 30                                      |         | 0,15     | 0,10  |          |               |
| » 20    | M <sub>N</sub><br>M <sub>E</sub>                  | 9 48 40<br>9 48 30                                     |         | 0,20     | 0,10  |          |               |
| » 21    | M <sub>N</sub><br>M <sub>E</sub>                  | 6 5 0<br>6 4 40                                        |         | 0,10     | 0,15  |          |               |
| » 21    | M <sub>N</sub><br>M <sub>E</sub>                  | 12 45 0<br>12 45 0                                     |         | 0,50     | 0,10  |          |               |
| » 28    | P<br>i S<br>L<br>M <sub>N</sub><br>M <sub>E</sub> | 18 33 23<br>18 43 56<br>19 8 8<br>19 18 38<br>19 14 30 |         | 4,00     |       | 9,450    |               |

Todos los días hubo intranquilidad.

El Director,



*Leon Herrera*