AGIP S.p.A.
SESI

JOINT VENTURE AGIP - SHELL

CONCESSIONE C.C2.AS.

POZZO C.C2.AS/11-NILDE W1

RELAZIONE FINALE

GELA, ottobre 1987

I N D I C E

5- Isocrone base F.ne Terravecchia

6- Linea sismica C82-28A

7- Linea sismica C82-19

8- Gradiente dei pori,di fratturazione e dei sedimenti

9- Diagramma di avanzamento

10- Quadro riassuntivo litostratigrafia-casing-fango-gradiente dei pori,di fratturazione e dei sedimenti-difficoltà di perforazione-avanzamento

11- Ripartizione tempi totali di perforazione

12- Profilo casing

ALLEGATI

1- Master log

2- Profilo 1:1000

3- ----------

4- Log Schlumberger

ISF-SLS-GR	Run 1	m	351 - 1304	(all. 4a1)
ISF-SLS-GR	Run 2	m	1304 - 1704	(all. 4a2)
ISF-SLS-GR	Run 3	m	1704 - 2226	(all. 4a3)
LDL-CNL-GR	Run 1	m	1704 - 2227	(all. 4b1)

4 bis - HDT

PARTE I	DATI GENERALI
PARTE II	DATI MINERARI
PARTE III	DATI GEOLOGICI

SESI : F.PEZZINO
G.RAGUSA
G.CANTARELLA

PARTE I **DATI GENERALI**

1.1 - Pozzo

NILDE W 1 - C.C2.AS/11

1.2 - Concessione

C.C2.AS.

1.3 - Ubicazione preliminare

Punto di scoppio 160 della linea sismica C.82.28A.

1.4 - Coordinate definitive

Lat. 37° 35' 44",035 N

Long. 11° 55' 03",786 E

1.5 - Quota tavola rotary

m 33 sopra il livello mare

1.6 - Profondità fondo marino

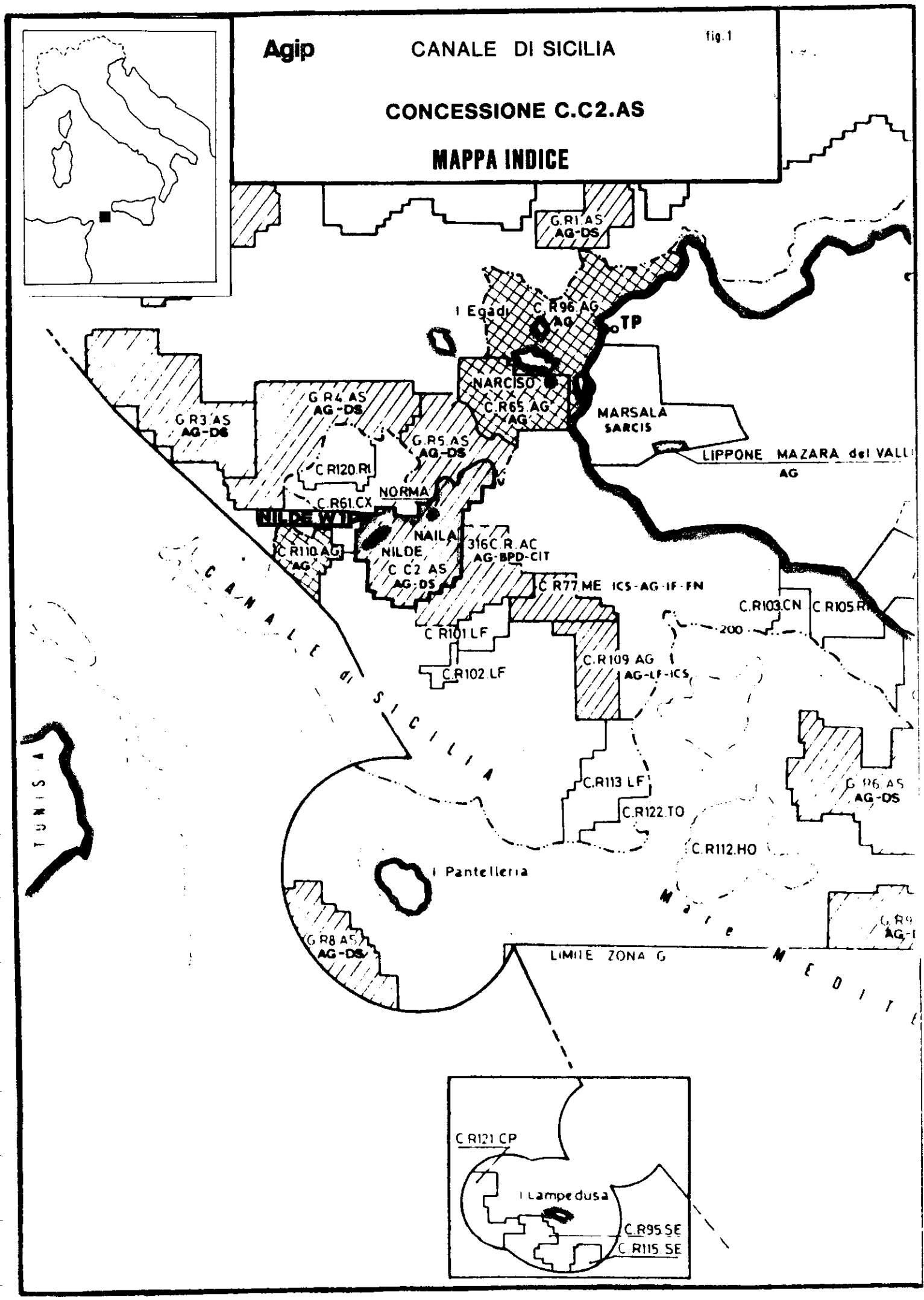
m 107,70

1.7 - Piattaforma di Perforazione

Semisommergibile SCARABEO II della Società SAIPEM S.p.A.

1.8 - Tempo di Perforazione

Inizio : 24/7/1986


Agip
CANALE DI SICILIA
fig. 1
CONCESSIONE C.C2.AS
MAPPA INDICE
G.R1.AS
AG-DS
I Egadi
C.R96.AG
AG
TP
NARCISO
C.R65.AG
AG
MARSALA
SARCIS
G.R4.AS
AG-DS
G.R3.AS
AG-DS
G.R5.AS
AG-DS
C.R120.R1
LIPPONE MAZARA del VALL
AG
NORMA
C.R61.CX
NILDE W.IP
NAILA
NILDE
C.C2.AS
AG-DS
316C.R.AC
AG-BPD-CIT
C.R110.AG
AG
C.R77.ME ICS-AG-IF-FN
C.R103.CN
C.R105.R
C.R101.LF
C.R102.LF
C.R109.AG
AG-LF-ICS
200
CANALE di SICILIA
C.R113.LF
C.R122.TO
G.R6.AS
AG-DS
C.R112.HO
I Pantelleria
TUNISIA
G.R8.AS
AG-DS
LIMITE ZONA G
C.R121.CP
I Lampedusa
C.R95.SE
C.R115.SE

Agip

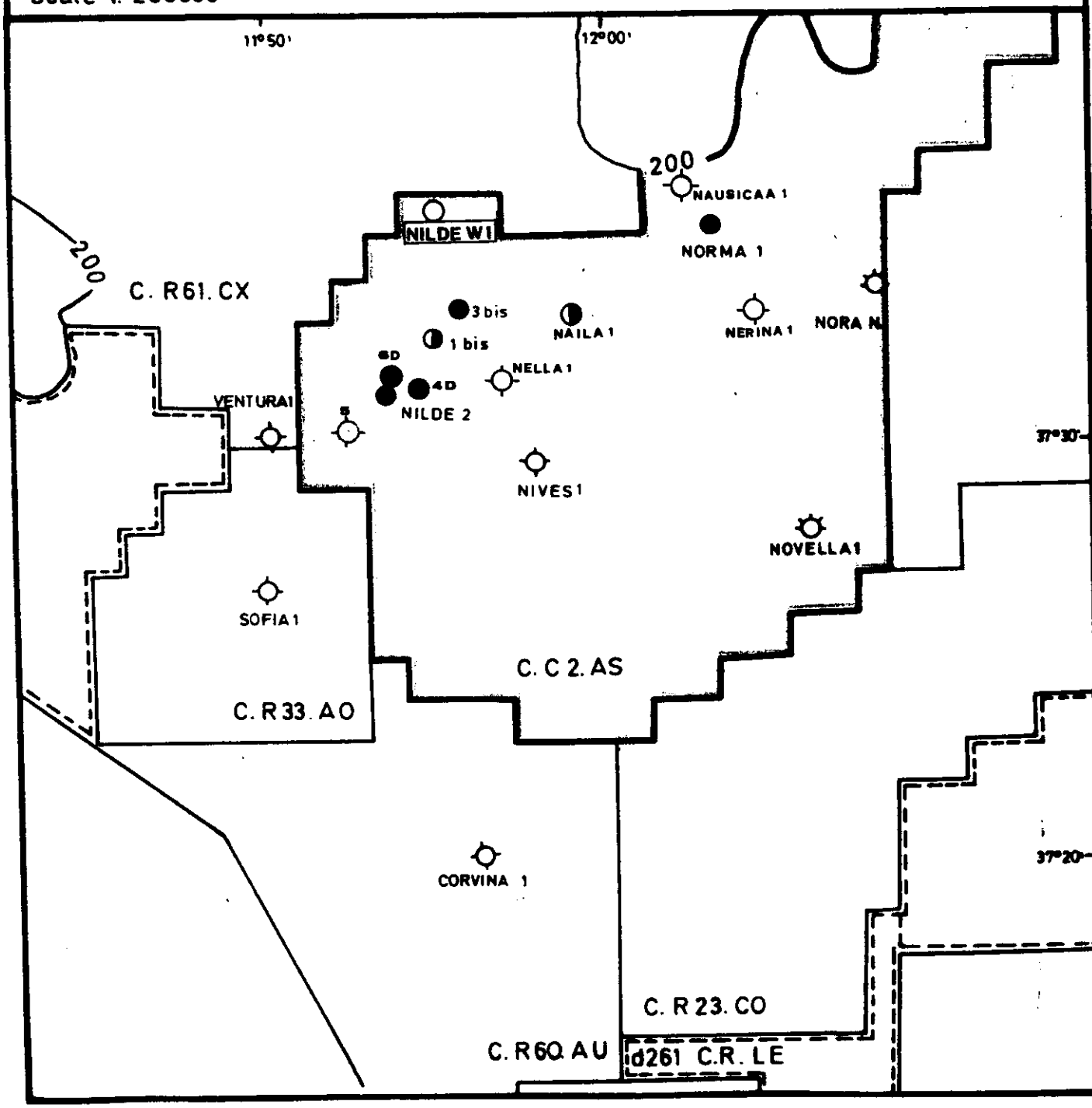
fig.2

CANALE DI SICILIA

CONCESSIONE C.C2.AS

MAPPA INDICE

Scale 1: 250'000



Fine : 30/8/1986

Impianto rilasciato : 12/09/1986

1.9 - Profondità finale

m 2229

1.10 _ Obiettivo

Calcari della f.ne Nilde (Serravalliano)

Arenarie della f.ne Ain Grab (Langhiano)

1.11 - Risultati

Pozzo Sterile.

1.12 _ Situazione attuale (v.fig.3)

Chiuso minerariamente.

1.13 _ Campionatura

Cuttings

I cuttings sono stati prelevati come segue :

da m 240 a m 1670 ogni 10 m

da m 1670 a m 2229 ogni 3 m

Carote di fondo

n° 1 da m 1708 a m 1717; recupero m 8,6 = 95,6 %

n° 2 da m 1717 a m 1726 ; recupero m 9 = 100%

Carote di parete

Nessuna.

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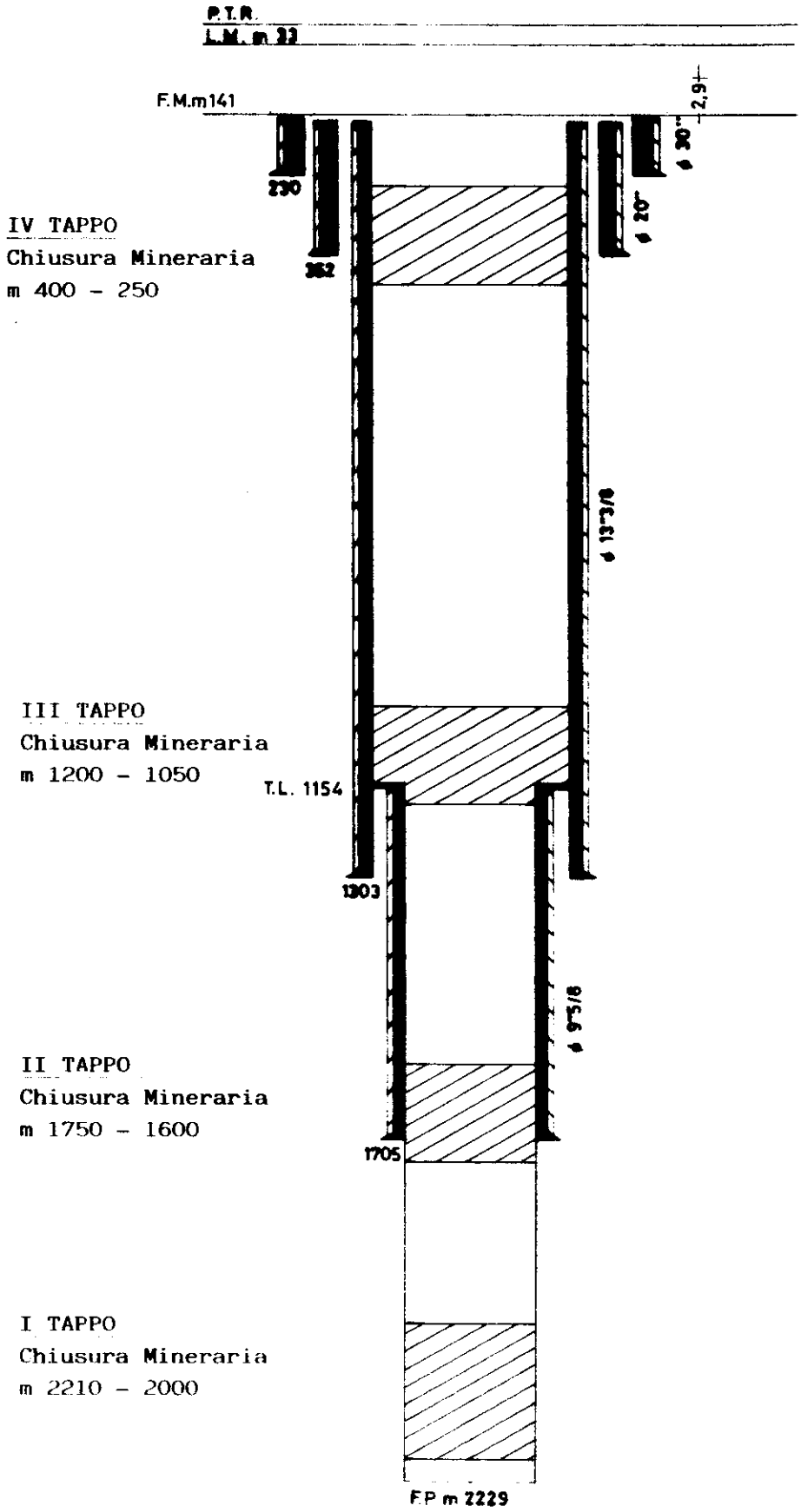
SERVIZIO : PERF

NILDE W 1

SITUAZIONE ATTUALE

Fig. 3

S.M.



1.14 - Operazioni Schlumberger

ISF/SLS/GR	m	351 - 2227,2	n° 3 registrazioni
LDL/CNL/GR	m	1704 - 2227,2	n° 1 registrazione
HDT	m	1705 - 2228	n° 1 registrazione
W.S.S.	m	140 - 2228	n° 39 stazioni

PARTE II **DATI MINERARI**

2.1 - Manifestazioni

2.1.1. Gas

Tracce di gas metano sono state rilevate lungo tutta la F.ne Terravecchia.

2.1.2. Olio

Nessuna.

2.1.3. Acqua

Nessuna.

2.2 - Assorbimenti

Nessuno.

2.3 - Mineralizzazione

Il pozzo è risultato sterile.

Al top della f.ne Nilde, obiettivo principale del sondaggio, è stata eseguita una prova di strato che non ha recuperato alcun fluido.

Dall'evidenza dei carotaggi elettrici però sia i calcari della F.ne Nilde che le arenarie della F.ne Ain Grab e della F.ne Fortuna risultano mineralizzati ad acqua salata.

2.4 - Prove di strato

Alla sommità della f.ne Nilde è stata eseguita una prova di strato con le seguenti modalità :

DST n° 1 1705 - 1740 in foro scoperto con packer in scarpa Ø 9" 5/8

Cuscino immesso : m 100 di fango a D = 1060 gr/l e m 700 di acqua dolce per complessivi l 6187

Durata totale : 6^{h} 40'

Erogazione : 1^{a} 35', 2^{a} 2^{h} 47'

Chiusura : 1^a 1^h; 2^a 2^h 23'

Recupero : nessuno

Pressioni di fondo, da RPG a m 1698.7 (q. 1665,7)

I.H.P.	= 181,7	Kg/cm^2	
1° I.F.B.H.P.	= 84,4	"	
1° F.F.B.H.P.	= 86.2	"	
1° S.B.H.P.	= 167.9	"	n.s.
2° I.F.B.H.P.	= 86,9	"	
2° F.F.B.H.P.	= 91,4	"	
2° S.B.H.P.	= 167,9	"	
F.H.P.	= 181,9	"	

2.5 - Caratteristiche petrofisiche

L'esame dei dati in possesso,ha permesso la zonizzazione delle caratteristiche petrofisiche dei calcari della f.ne Nilde.

In particolare la zona sommitale da m 1705 a m 1740 é stata oggetto di una prova di strato risultata secca,e,dal prelievo di due carote di fondo estremamente compatte che indicano dei valori di permeabilità e porosità scadenti.

Da m 1740 a m 1805 tali caratteristiche migliorano sensibilmente registrandosi dei valori di porosità (v.LDL-CNL-GR) media intorno al 9% con punte del 12%.

Nella parte inferiore del serbatoio i parametri petrofisici ritornano ad essere meno buoni con valori di porosità max intorno al 6%.

Una valutazione di tali caratteristiche nella f.ne Ain Grab, obiettivo secondario del sondaggio,risulta piuttosto aleatoria in quanto non sono state prelevate carote di fondo né sono state effettuate prove di strato.L'analisi dei carotaggi elettrici evidenzia comunque,nei livelli arenacei,dei valori di porosità oscillanti fra il6 % ed il 15%.

2.6 Caratteristiche dei fluidi

Non si dispone di alcun campione di fluido di strato.

2.7 Pressioni

I valori misurati in occasione del DST effettuato alla sommità della f.ne Nilde non risultano stabilizzati e pertanto non è stato possibile ricavare il valore del gradiente di formazione.
Le argille della f.ne Terravecchia sono state attraversate con un fango a densità massima pari a 1240 gr/l; l'esame dei tempi di transito, ricavati dal sonic log, peraltro indica che questa formazione si trova in leggera sovrapressione (vedi dati di perforazione).

2.8 Temperatura

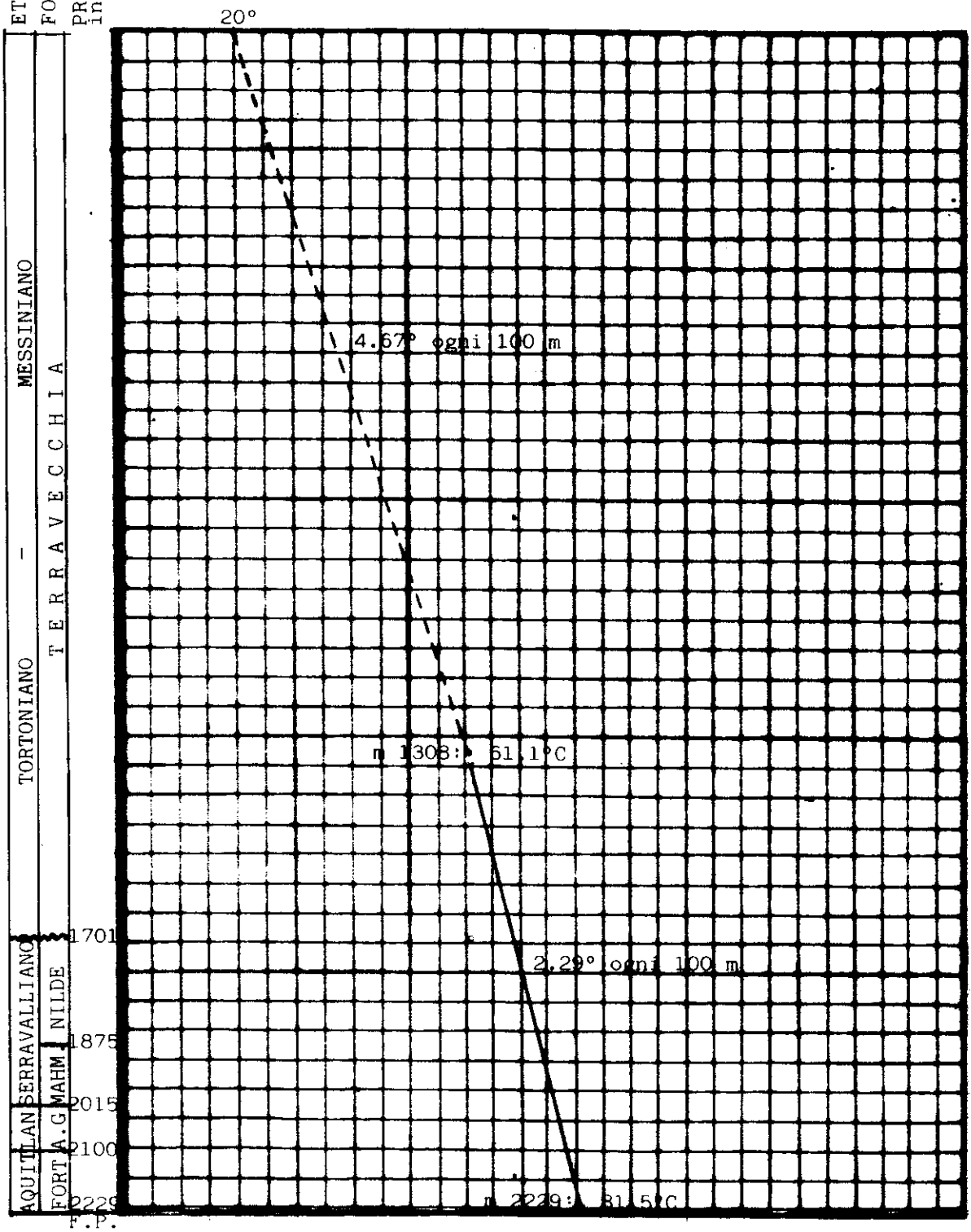
Sulla base delle temperature misurate durante la registrazione dei carotaggi elettrici, è stato ricavato il gradiente di temperatura, come da fig.4.

Settore Operativo Sicilia

POZZO: NILDE W 1

fig.4

GRADIENTE DI TEMPERATURA



PARTE III

DATI GEOLOGICI

3.1 - Scopo del pozzo

Il sondaggio esplorativo NILDE W. 1 è stato ubicato nella zona nord-occidentale della concessione C.C2.AS, circa 9 Km a NNE del giacimento di Nilde che è mineralizzato ad olio nei calcari del Serravalliano (Calcari di Nilde).

L'assetto strutturale della concessione C.C2.AS consiste in una serie di alti dei suddetti calcari, disposti su trends subparalleli ad andamento NE-SW, generati dalle spinte compressive che si sono sviluppate dal Miocene superiore al Pliocene.

In questo panorama la struttura di Nilde W si configura come un blocco, limitato da faglie dirette, posto all'estremità nord-orientale di una dorsale ad andamento NE-SE e delimitata da faglie inverse di carattere regionale.

La struttura si estende su circa 7 Km^2, con una chiusura verticale di circa 180 m.

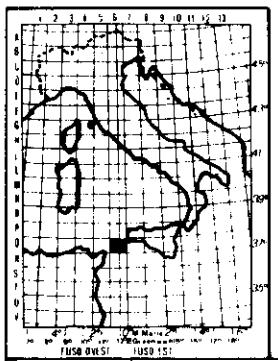
3.2 - Litologia - Stratigrafia - Ambiente

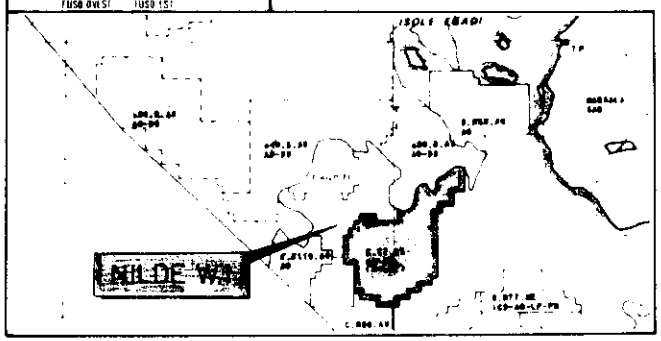
m 350 - 1701 : Argilla grigio-verdastra, indurita, scagliettata, localmente silto-sabbiosa.
F.ne TERRAVECCHIA
Età: Messiniano-Tortoniano
Ambiente: Outer-inner shelf
Zona: Globorotalia acostaensis, Globorotalia humerosa.

m 1701 - 1875,5 : Packstone grigio-marroncino, intraclastico, fossilifero, glauconitico, microvacuolare, localmente ricristallizzato.

Agip SpA GERM	CANALE DI SICILIA-ZONA "C" Conc. C.C2.AS BASE Fne TERRAVECCHIA	fig. 5
AUTORE	CONTOUR INTERVAL 25 msec	
DISEGNATORE	DATA: DICEMBRE 1985 / SCALA: 1:25000 / DISEGNO N°: 377/2	
Foglio/i 1:100000 Q 6		

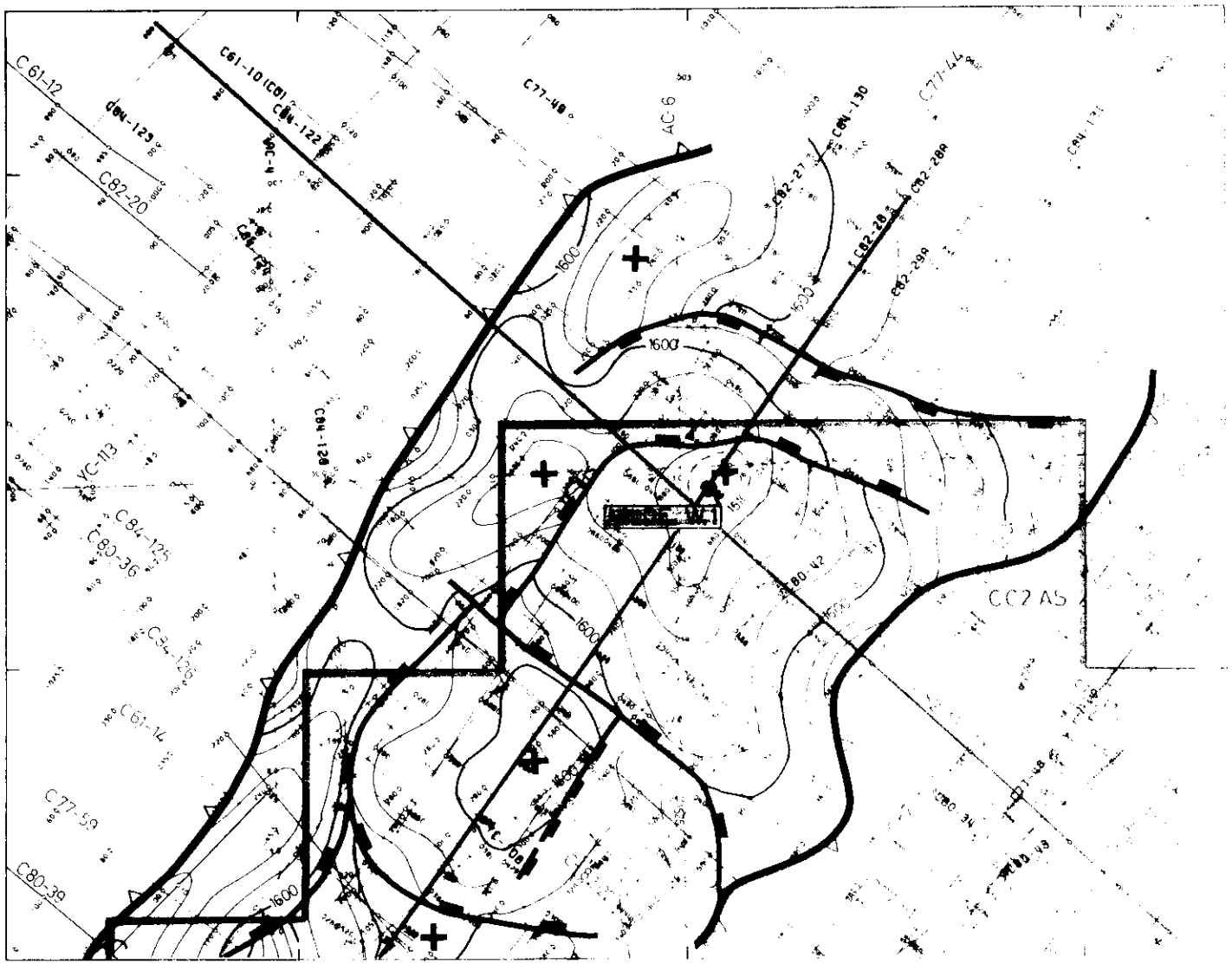
carta indice





SCALA 1 : 1000000

legenda



Agip

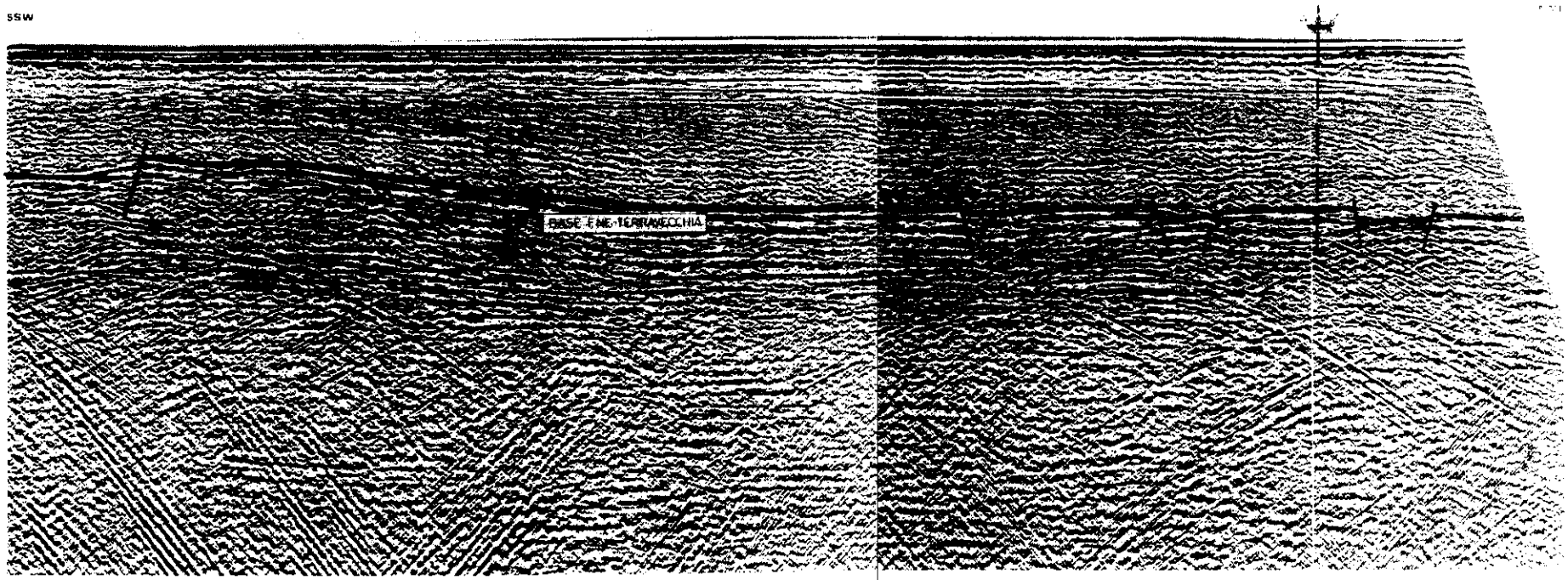
fig. 6

LINEA C82-28A

C82 19

NILDE W.1

SSW



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GERM

fig-7	data	dis.n.
	dicembre 1985	377/3

LINEA C82-19

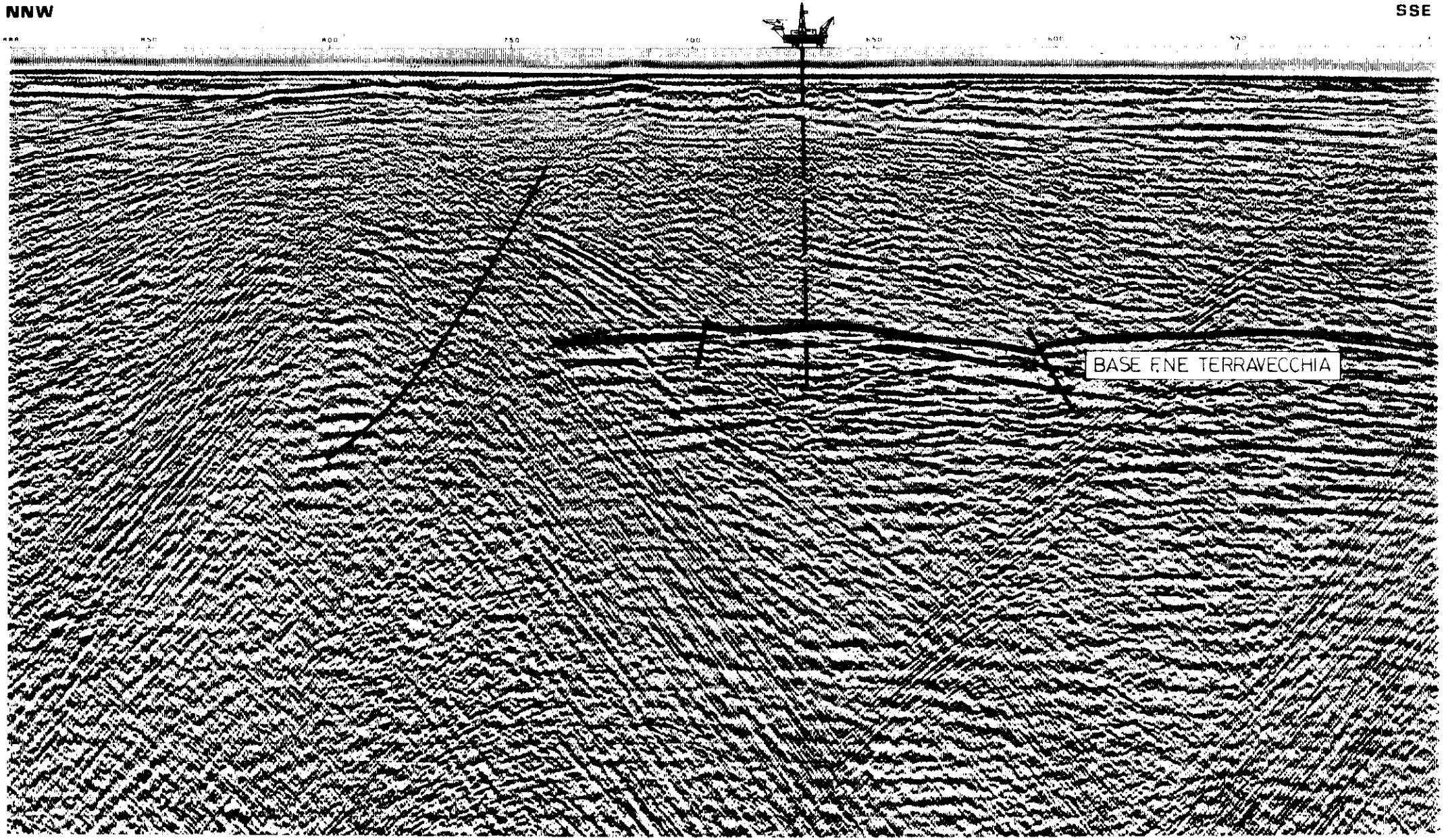
C82 - 28A

NILDE W.1

(proiettato)

NNW

SSE



F.ne CALCARI DI NILDE

Età: Serravalliano

Ambiente: OSP + SL

Zona: Borelis, Heterostegina

m 1875,5 - 2015 : Packstone marroncino, fossilifero, argilloso, con bancate di marna

F.ne MAHMOUD

Età: Serravalliano

Ambiente: Epibatiale superiore

Zona: Globigerinoides trilobus, Praeorbulina

m 2015 - 2100 : Arenaria quarzosa biancastra a grana medio-fine e cemento carbonatico. Rare intercalazioni di marna e calcare

F.ne AIN GRAB

Età: Langhiano

Ambiente: Outer shelf

Zona: Globigerinoides trilobus e Praeorbulina

m 2100 - 2229 (T.D.) : Argilla grigio-verdastra, indurita, scagliettata, con bancate di arenaria quarzosa, grigiastra, a grana fine e cemento carbonatico-argilloso

F.ne FORTUNA

Età: Aquitaniano

Ambiente: Outer shelf

Zona: Catapsidrax dissimilis

3.3 - Interpretazione geologica del dipmeter

Il Continuous Dipmeter é stato registrato con sonda HDT in un unico run da m 1705 a m 2227.

I parametri usati per l'elaborazione dei dati,uti - lizzando il Cluster program,sono i seguenti:

-Correlation interval m 1

-Step distance m 0,5

-Search angle 35° x 2

Il sondaggio ha attraversato la tipica serie del Banco Avventura,costituita dalle formazioni Terravecchia,Nilde, Mahmoud, Ain Grab e Fortuna.

La registrazione,che ha avuto inizio al top della f.ne Nilde, é caratterizzata, a causa sopratutto delle cattive condizioni tecniche del foro, da responsi mediocri ma comunque sufficientemente indicativi.

Essi evidenziano pendenze costanti verso SE con valori nell'ordine di 4° + 5°; mentre non sono segnalati episodi tettonici significativi.

Analisi dipmeter

m 1705 - 1875,5 Packstone - F.ne Nilde

Responsi nel complesso scadenti sia come qualità che come organizzazione.Solo nella parte basale dell'intervallo si evidenziano pendenze di circa 5° con immersione verso SE.

m 1875,5 - 2015 Packstone con bancate di Marna.- F.ne Mahmoud

Responsi di sufficiente organizzazione e qualità.Come la Nilde con la quale é in continuità di sedimentazione,immerge a SE con pendenza costante di 5°.

m 2015 - 2100 Arenaria con livelletti di Argilla e calcare.

F.ne Ain Grab.

Anche in questo intervallo i responsi risultano sufficientemente organizzati e di qualità mediocre,immergenti a SE con valori di circa 5°.

m 2100 - 2227 Argilla con intercalazioni di Arenaria - F.ne Fortuna

Responsi di scarsa qualità ed organizzazione che,come nelle formazioni precedenti,pendono di 4° ÷ 5° verso SE.

3.4 - Tettonica

Come descritto nel paragrafo precedente, il dipmeter ha evidenziato pendenze strutturali, costanti verso SE,dell'ordine di 4° ÷ 5°.Non sono emerse evidenze di fenomeni tettonici di rilievo.

3.5 - Risultati minerari

Il sondaggio é terminato sterile alla profondità di m 2229 nelle argille della F.ne Fortuna (Aquitaniano).

Una prova di strato, eseguita al top dei Calcari di Nilde, é risultata secca. L'analisi dei carotaggi elettrici,eseguiti a fine pozzo,ha però indicato che i "Calcari di Nilde" sono ad acqua salata.Acquifere sono pure risultate le formazioni Ain Gran e Fortuna.

3.6 - Conclusioni

Il sondaggio Nilde Ovest 1, ha attraversato la serie tipica del Canale di Sicilia (offshore trapanese) completando l'esplorazione delle tre formazioni che costituiscono i potenziali reservoir e che sono i "Calcari di Nilde", le Arenarie della F.ne Ain Grab e i livelli arenacei della F.ne Fortuna.

I "Calcari di Nilde" sono stati rinvenuti circa 100 metri più in alto rispetto alle previsioni ed inoltre i dati del dipmeter indicano che il pozzo é stato ubicato in una situazione strutturale abbastanza favorevole.Ciò nonostante il pozzo é risultato sterile.

In quest'area ,oltre a Nilde W , diverse altre strutture, anch'esse apparentemente dotate di buone chiusure ed esplorate in situazioni ottimali,sono risultate sterili (Nerina,Naila,Nella) o con pay zones molto ridotte (Norma).

Responsabile di questi scarsi o mancati accumuli potrebbe essere una scarsa disponibilità di idrocarburi nell'area.

Movimenti tettonici tardivi potrebbero però aver creato le attuali trappole quando la migrazione era già avvenuta,magari danneggiando o distruggendo accumuli che si erano formati in precedenza.

PARTE IV DATI DI PERFORAZIONE

SESI : S.MAZZEI

A.SPERA

PARTE IV

DATI DI PERFORAZIONE

4.1 - DATI GENERALI

4.1.1 - Impianto : Scarabeo 2 (SAIPEM)

4.1.2 - Posizionamento impianto

Coordinate centro pozzo:	Lat. 37° 35' 44" ,035 N
	Long. 11° 55' 03" ,786 E
PTR - Livello mare	mt 33
PTR - Fondo mare	mt 140,7

4.1.3 - Tempi di attività

Inizio moving :	23/07/86
Inizio perforaz. :	24/07/86
Fine perforazione :	30/08/86
Impianto rilasciato:	12/09/86

4.2 - SEQUENZE OPERATIVE

4.2.1 - Foro Ø 36" a m 234 per C.P. a m 230

Disceso T.G.B. a fondo mare (mt 141). Disceso bit Ø 26" (vedi tab.) + H.O. Ø 36" e perforato fino a mt 234.

Disceso C.P. Ø 30" a mt 230 e cementato con m^3 62 di malta D: 1900 g/l confezionata con 820 ql di cem "G". Disceso bit Ø 26", fresato cemento + scarpa. Disceso Pin-Connector + Marine Riser su housing Ø 30". Agganciato con 15 ton. Montato Diverter.

4.2.2 - Foro Ø 26" a m 355 per csg Ø 20" a m 352

Disceso bit Ø 17½"(vedi tab) in scarpa, spiazzato fango AR/AS D: 1060 g/l e perforato fino a m 356. Eseguito prova di verticalità 0°.

Montato bit Ø 17½"+ Underreamer Ø 26" ed allargato foro fino a mt 355. Spiazzato fango in pozzo D: 1350 g/l;recuperato Riser. Eseguita candelata con bit Ø 26".

Disceso csg Ø 20", 106,5 lb/ft, J55 a 352 m. Cementato con m^3 35 di gel cemento D: 1520 g/l confezionata con 250 ql di cem "G" + 3% bentonite seguita da m^3 33 di malta D: 1900 g/l confezionata con 435 ql di cemento "G".

Disceso B.O.P. stack ed eseguito prove di tenuta.

4.2.3 - Foro Ø 17½" a m 1308 per csg 13" 3/8 a m 1303

Disceso bit Ø 17½"(vedi tab) fresato cemento + scarpa e perforato fino a mt 1308 con fango LS 1240 g/l. Ultima verticalità 1° a m 1308. Durante i vari controlli foro, forzamenti 15-20 ton per tutta la fase.

BHA usata durante questa fase: Bit + NB + VC + 1 DC 9½" + Stab + 2 DC 9½" + Stab + 6 DC 8" + HW + DP

Eseguiti i seguenti logs:

ISF-SLS-GR da m 1304 a m 351.

Disceso csg Ø 13"3/8, 68 lb/ft, N 80, BTA a mt 1303.

Eseguita cementazione con m^3 60 di Gel cemento D: 1520 g/l

Confezionata con 437 ql cem "G" + 3% bentonite. Seguita da m^3 30 di malta D: 1900 g/l confezionata con 396 ql cem "G". Disceso seal assembly 18" 3/4 x 13" 3/8 ed eseguite prove di tenuta BOP.

4.2.4 - <u>Foro Ø 12"1/4 a m 1707 per csg Ø 9" 5/8 a m 1705</u>

Disceso bit Ø 12"1/4 (vedi tab) con BHA: bit + NB + VC + 1 DC 8" + Stab + 2 DC 8" + Stab + 9 DC 8" + HW + DP. Fresato tappi + collare + cemento + scarpa e perforato fino a mt 1676. Assemblata nuova BHA: bit + VC + 8 DC 8" + Jar + 3 DC 8" + HW + DP e perforato fino a mt 1707. Fango impiegato LS, D = 1250 g/l.

Eseguito i seguenti logs:

ISF-SLS-GR da m 1704 a m 1304

Disceso csg Ø 9 5/8", N 80, 43,5 lb/ft, BTA con liner hanger MC idraulico (T.L. mt 1153) con scarpa mt 1705.

Eseguita cementazione con m^3 32 di malta D: 1900 g/l confezionata con ql 425 di cem "G" + 0,4% HALAD 14 + 0,2% CFR_2.

Eseguite prove di tenuta B.O.P.

4.2.5 - Foro Ø 8½"a m 2229

Disceso bit Ø 8½"(vedi tab) con nuova BHA: Bit + J. SUB + VC + 12 DC 6" 3/8 + HW + DP, fresato landing collar cemento + float collar. Sostituito fango LS: D= 1250 g/l con fango AR: D= 1060 g/l. Fresato cemento e scarpa e perforato fino a mt 1708. Disceso carotiere M.C.B. 6 1/4" x 3" e carotato 1708 ÷ 1717 m: recupero 96%.

Prelevata 2^carota da mt 1717 a mt 1726 - Recupero 100%. Disceso bit Ø 8½"con BHA stabilizzata e perforato da mt 1726 a mt 1740. Sostituito fango AS D: 1060 g/l con BS D 1100 g/l. Eseguito DST N. 1 con packer RTTS Ø 9" 5/8 a m 1695.

Disceso bit Ø 8½"con BHA stabilizzata e perforato da m 1740 a m 2080. A questa quota la batteria si prende in sollevamento; liberata verso il basso. Perforato fino a mt 2122. Sospeso per calo di pressione 30 atm e calo di peso al M.D. di 8 ton. Pesce rimasto in pozzo: bit + NB + VC + 1 DC + STAB + 2 DC + STAB + 5 DC.

Disceso overshot e recuperato pesce.

Perforato da m 2122 a m 2229. Ultima verticalità 3° a m 2228.

Eseguiti i seguenti logs:

ISF-SLS-GR da m 2228 a m 1706

LDL-CNL-GR da m 2228 a m 1706

HDT da m 2228 a m 1706 (BHT= 81°C a m 2228)

Eseguite prove di velocità da m 2228 a m 140

4.3 - CHIUSURA MINERARIA

Eseguito 1° tappo di chiusura mineraria m 2210 ÷ 2000 con m^3 10 di malta D= 1900 g/l confezionata con 132 ql cem "G" + 0,3% di H 14.

Eseguito 2° tappo da m 1750 a m 1600 con m^3 6 di malta D: 1900 g/l, confezionata con 80 ql di cem "G" + 0,3% H 14

Eseguito 3° tappo da m 1200 a m 1050 con m^3 10 di malta a D: 1900 g/l, confezionata con ql 132 di cem "G".

Eseguito 4° tappo da m 400 a m 250 con m^3 11,7 di malta a D: 1900 g/l confezionata con 154 ql di cem "G".

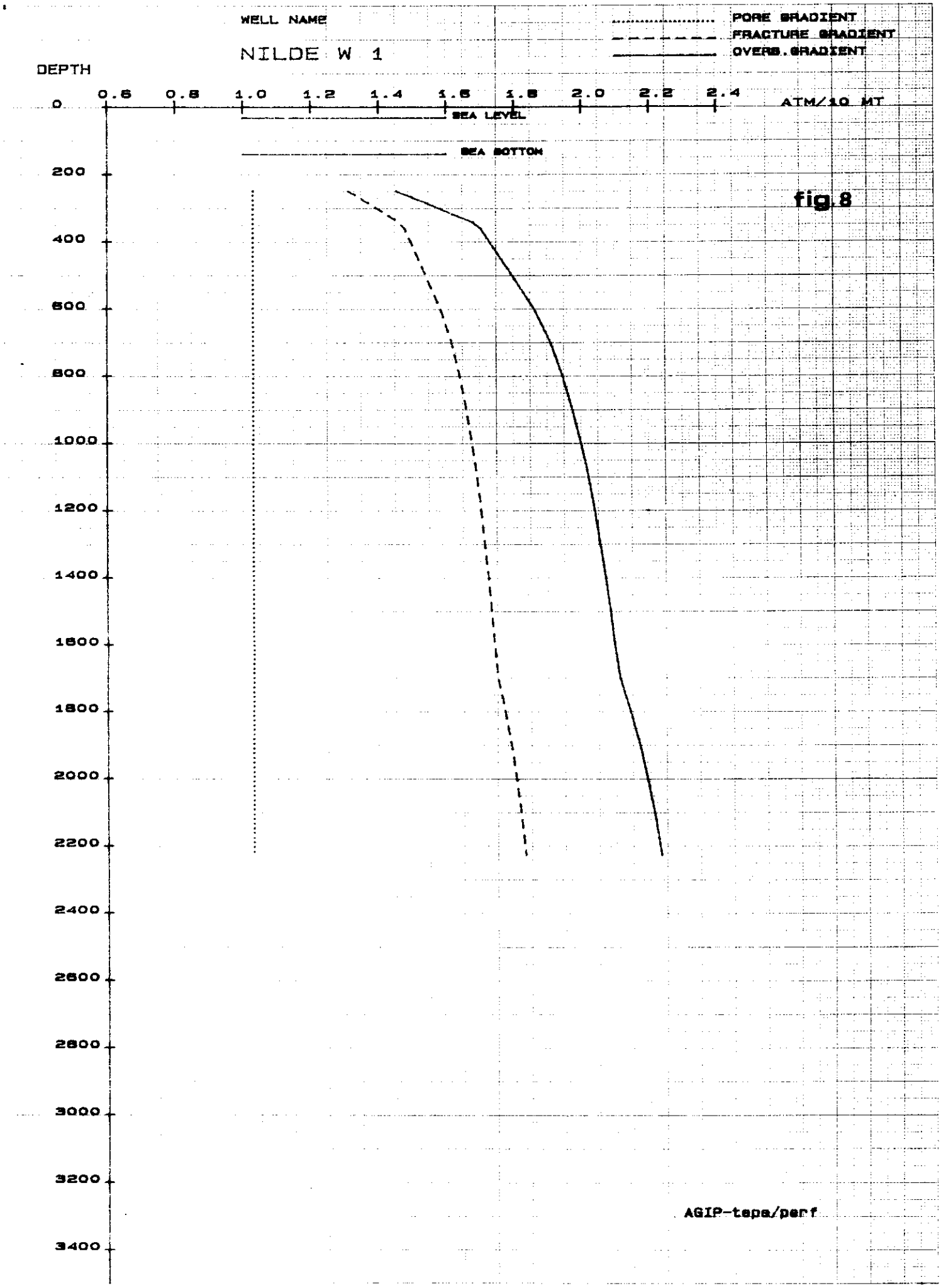
Recuperato wear bushing.Recuperato Stack BOP.

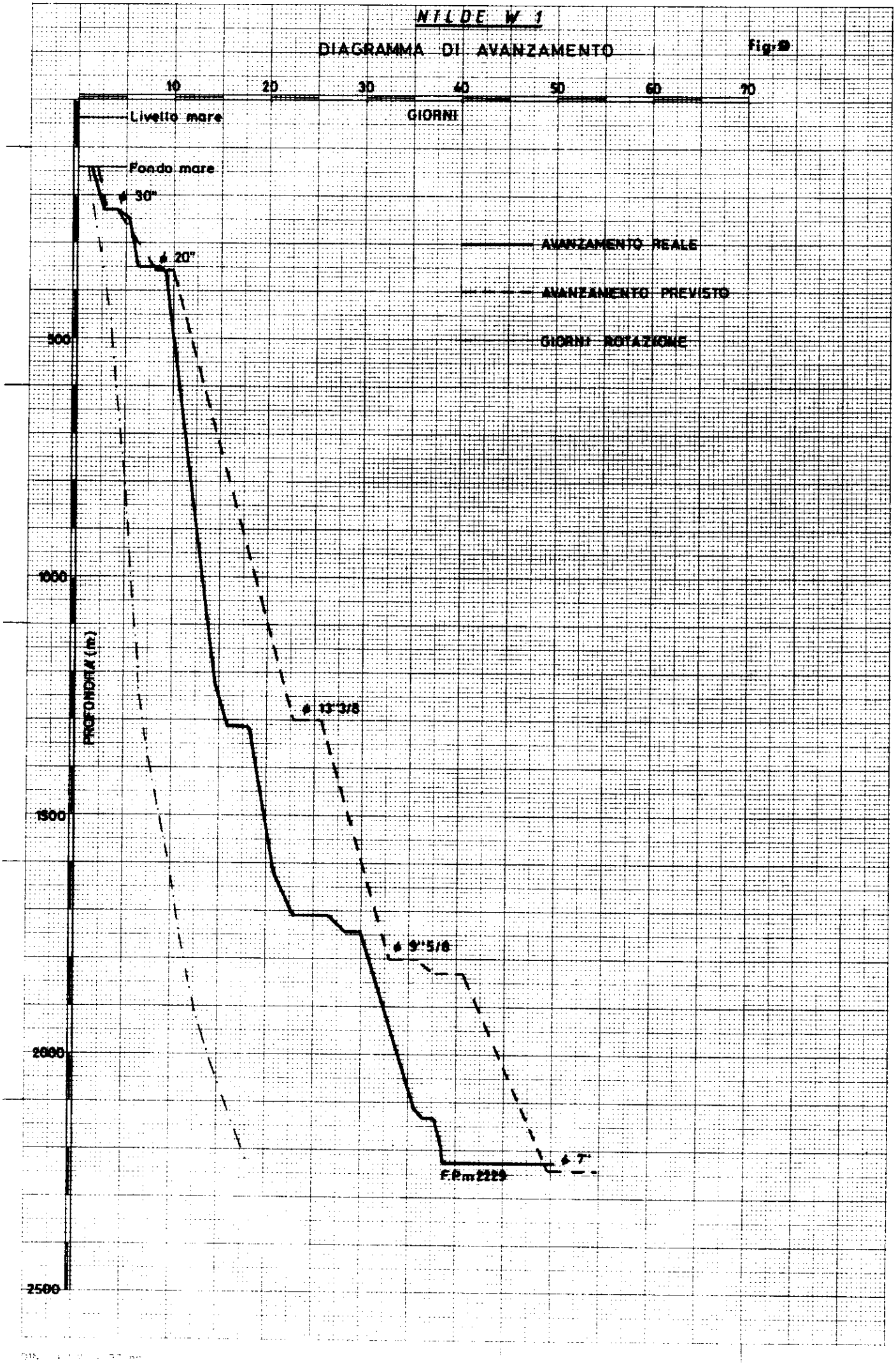
Tagliato e recuperato casing Ø 13"3/8 e 20" a m.147,5.

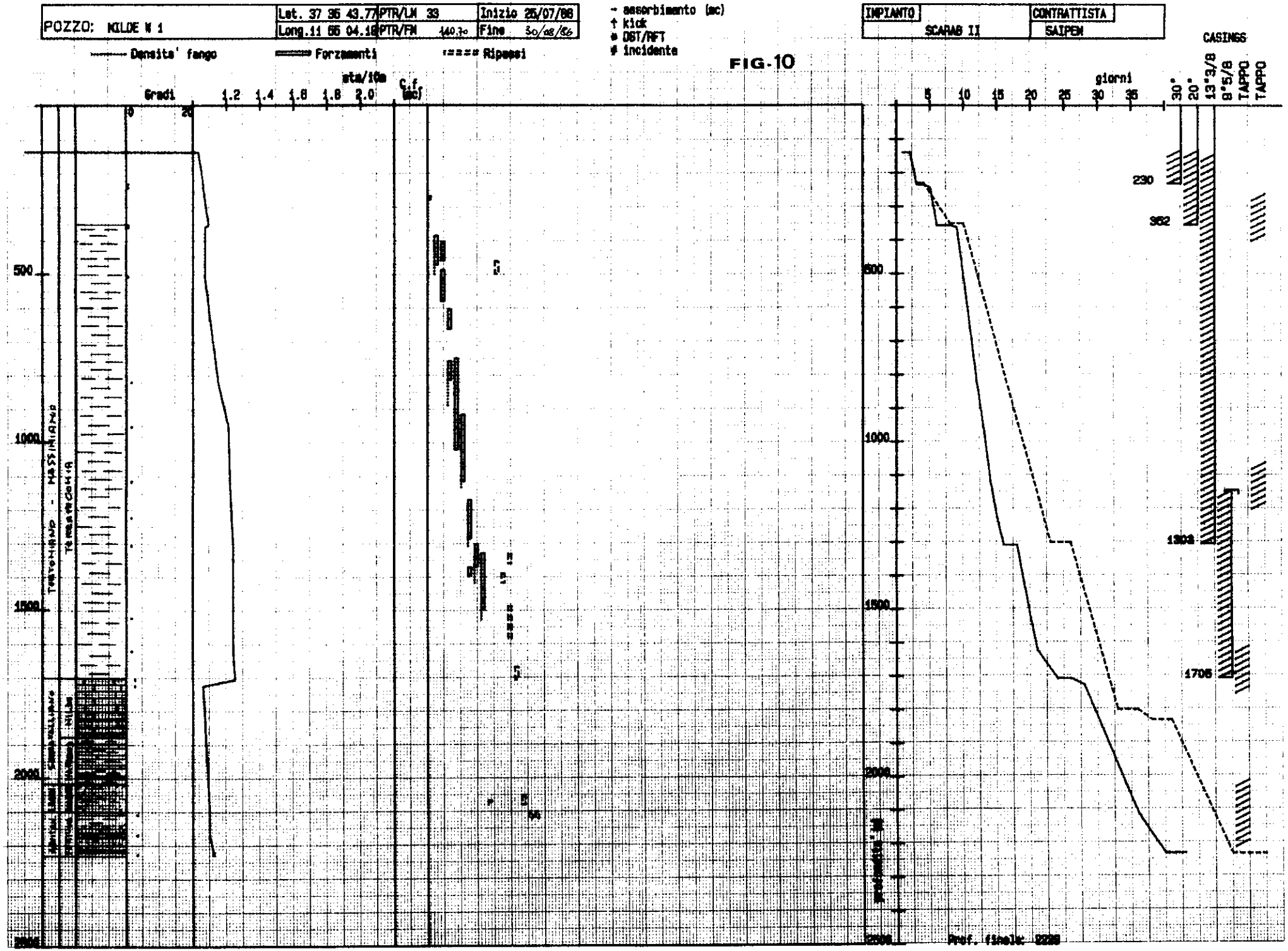
Tagliato e recuperato c.p. Ø 30" a m 143,5.Recuperato testa pozzo.

Pompato in pozzo 18 m3 di malta a D=1900 g/l.

Impianto rilasciato alle ore 22.00 del 12/9/86.


WELL NAME
NILDE W 1
PORE GRADIENT
FRACTURE GRADIENT
OVERB.GRADIENT
DEPTH
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
ATM/10 MT
0
SEA LEVEL
SEA BOTTOM
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
fig.8
AGIP-tepa/perf


NILDE W 1
DIAGRAMMA DI AVANZAMENTO
Fig. 2
10
20
30
40
50
60
70
GIORNI
Livello mare
Fondo mare
ϕ 30"
ϕ 20"
AVANZAMENTO REALE
AVANZAMENTO PREVISTO
GIORNI ROTAZIONE
500
1000
1500
2000
2500
PROFONDITÀ (m)
ϕ 13"3/8
ϕ 9"5/8
ϕ 7"
F.P. m 2229


POZZO: MILDE N 1
Lat. 37 36 43.77
Long.11 55 04.18
PTR/LM 33
PTR/FM 140.30
Inizio 25/07/86
Fine 30/08/86
Densita' fango
Forzamenti
Ripassi
- assorbimento (ac)
† kick
* DST/RFT
# incidente
FIG-10
IMPIANTO
SCARAB II
CONTRATTISTA
SAIPEM
CASINGS
giorni
Gradi
sta/10m
C.f.
Prof. finale: 2208

4.4 TABELLE SCALPELLI E DATI IDRAULICI

AGIP — TABELLA SCALPELLI E DATI IDRAULICI

SERVIZIO PERFORAZIONE

POZZO NILDE W 1 — CONCESSIONE C-C2-AS — NAZIONE ITALIA — CONTRATTISTA SAIPEM

Misure metriche [X] — IMPIANTO-MARCA E MODELLO SCARABEO II — RAPPRESENTANTE CONTRATTISTA D'ANGELO-PECCHIA — RAPPRESENTANTE COMMITTENTE SALIS-BARDINO — FOGLIO N. 1

Misure americane [ ] — DATA INIZIO PERFORAZIONE 24/7/86 — DATA FINE POZZO — ASTE DI PERFORAZIONE OD 5" lb/ft 19,5 — TOOL JOINTS : TIPO — ϕ e — ϕ i

POMPA N. 1 MARCA E MODELLO N-1600 — ASTE PESANTI : N. 3 — OD 9" ½ — ID — LUNGHEZZA

POMPA N. 2 MARCA E MODELLO N-1600 — ASTE PESANTI : N. 6 — OD 8" — ID — LUNGHEZZA

Data	Disc. N.	Serie N.	Tipo	ϕ	Ugelli 1/32			Prof. estraz.	Metri perfor.	Ore di lavoro	Ore progr.	Peso sullo scalp.	T/ Poll	RPM	Cond. scalp.			pompa n. 1		pompa n. 2		Portata	Pressione	Velocità		Potenza idraulica			Vert.	Fango			Terreni
					1	2	3								T	B	G	cam.	colpi	cam.	colpi			anul.	duse	Totale	scalp.	HHP / Poll.²		peso	visc.	sabbia %	
	1CRR	//	OSC3A	26	16	16	16	234	141	21 15	21 15	0/6	/	90	2	2	I	7"		6 3/4		3500	74						1°	1060	85	/	ARGILLA
	2	XF3100	SDS	17½	20	20	20	356	122	27 15	48 30	0/5	/	125	2	2	I	7"		6 3/4		3500	104						Ø	1090	59	/	"
2/8	2RR	XF3100	SDS	17½	16	16	16	700	344	47 15	95 45	0/5	/	120	3	4	I	7	49	6 3/4	49	3200	190						1°	1180	54	/	"
7/8	3	XF3097	SDS	17½	16	16	16	1308	608	83 15	173°	5/8	/	120	2	5	I	7	48	6 3/4	48	3100	210						1°	1240	55		"
12/8	4	AAF081	HP11	12 1/4	14	14	14	1676	368	59 15	238 15	5/10	0,8	120 /100	3	5	I	7	32	6 3/4	32	2100	165						2° 1/4	1250	58	/	"
	5		HP11	12 1/4	16	16	16	1707	31	16 30	254 45	5/6	0,8	100	2	2	I	7	32	6 3/4	32	2100	12						2°	1250	63	/	ARGILLA CALCARE
17/8	6	PLR813	HP11	8½	/	/	/	1708	1	0 45	255 30	10	0,9	80	2	3	I	7	55	6 3/4	/	1800	60						2°	1060	44	/	CALCARE
18/8	C1	150110	C201	8½	/	/	/	1717	9	3 30	259	9	0,7	70	95%			7	26	6 3/4	/	900	36						2°	1060	44	/	"
19/8	C2	//	C201	"	/	/	/	1726	9	3 30	262 30	6	0,8	70	90%			7	26	6 3/4	/	900	36						2°	1060	43	/	"
20/8	7	XF 4390	FDGH	8½	16	16	16	1740	14	5	267 30	10 /12	0,9	90	1	1	I	7	53	6 3/4	/	1600	63	87	70	224	134	/	2°	1060	44	/	"
23/8	7RR	"	"	"	"	"	"	1854	114	35 30	303	12	0,9	90	4	5	I	7	56	6 3/4	/	1700	85	90	75	321	193	/	1°45	1080	45	/	"
25/8	8	XF4394	"	"	14	14	14	2010	156	57	360	12 /14	1,6	90	7	6	1 /16	7	53	6 3/4	/	1600	108	87	92	384	230	/	2° 3/4	1100	44	/	CALCARE MARNA
27/8	9	XF9987	F2	"	14	14	14	2122	112	35 45	395 45	12 /14	1,6	90	1	3	I	7	53	6 3/4	/	1600	108	87	92	384	230	/	2° 3/4	1100	45	TR.	ARGILLA ARENARIA
29/8	10	XF4331	FDGH	8½	14	14	14	2172	50	22 30	418 15	12	1,4	100	8	4	I	7	/	6 3/4	53	1600	105	87	92	373	228	/	2° 3/4	1100	47	TR.	"
1/9	11	XE0960	F2	8½	14	14	14	2229	57	25	443 15	9	1	100	2	3	I	7	53	6 3/4	/	1600	96	87	92	341	219	/	3°	1130	43	TR.	"

NOTE :

codice 11 1307/a Centro Stampa Agip

4.5 TABELLE RIPARTIZIONE TEMPI

RIPARTIZIONE TEMPI FASE Ø 36"

Pozzo **NILDE W 1**

---A---	---B---	---C---	---D---	---E---	---F---	CODICE OPER.	DESCRIZIONE TIPO DI OPERAZIONE	T O T A L E ORE	GIORNI	%
21^{15}	3^{15}	0^{30}			5^{30}	A	PERFORAZIONE	30^{30}	1,27	46,38
						B	CAROTAGGIO			
	15^{45}	1°°				C	TUBAGGIO	16^{45}	0,69	25,47
						D	CONTR. MANIF. E ASSORB.			
						E	PESCAGGIO PRESE BATTERIA			
						F	LOGS ELETTRICI			
						G	PROVE DI STRATO			
						H	DEVIAZIONE			
						I	APPARECCHIATURA DI SICUR.			
						L	ABBANDONO POZZO			
		18^{30}				M	SPOSTAMENTO IMPIANTO	18^{30}	0,77	28,15
						N	VARIE			
						O	RIPARAZIONE MANUTENZIONE			
						P	ATTESA			
							TOTALE	65^{45}	2,73	100%

RIPARTIZIONE TEMPI FASE Ø 26"

Pozzo **NILDE W 1**

---A---	---B---	---C---	---D---	---E---	---F---	CODICE OPER.	DESCRIZIONE TIPO DI OPERAZIONE	T O T A L E ORE	GIORNI	%
19^{15}	10^{15}	2^{30}	17^{30}			A	PERFORAZIONE	49^{30}	2,06	42,23
						B	CAROTAGGIO			
12°°	21^{45}	1^{45}				C	TUBAGGIO	35^{30}	1,48	30,28
						D	CONTR. MANIF. E ASSORB.			
						E	PESCAGGIO PRESE BATTERIA			
						F	LOGS ELETTRICI			
						G	PROVE DI STRATO			
						H	DEVIAZIONE			
	10^{15}		2^{45}	2°°	16^{45}	I	APPARECCHIATURA DI SICUR.	31^{45}	1,33	27,07
						L	ABBANDONO POZZO			
						M	SPOSTAMENTO IMPIANTO			
						N	VARIE			
	0^{30}					O	RIPARAZIONE MANUTENZIONE	0^{30}	0,02	0,42
						P	ATTESA			
							TOTALE	117^{15}	4,88	100%

RIPARTIZIONE TEMPI FASE Ø 17½"

Pozzo **NILDE W 1**

---A---	---B---	---C---	---D---	---E---	---F---	CODICE OPER.	DESCRIZIONE TIPO DI OPERAZIONE	T O T A L E ORE	GIORNI	%
130°°	32^{45}	10^{45}	2^{15}	2^{15}	1^{15}	A	PERFORAZIONE	179^{15}	7,45	79,18
						B	CAROTAGGIO			
11°°	17^{30}	9^{30}			1^{15}	C	TUBAGGIO	39^{15}	1,64	17,49
						D	CONTR. MANIF. E ASSORB.			
						E	PESCAGGIO PRESE BATTERIA			
4^{30}						F	LOGS ELETTRICI	4^{30}	0,18	1,99
						G	PROVE DI STRATO			
						H	DEVIAZIONE			
			2^{30}			I	APPARECCHIATURA DI SICUR.	2^{30}	0,11	1,11
						L	ABBANDONO POZZO			
						M	SPOSTAMENTO IMPIANTO			
						N	VARIE			
				0^{30}		O	RIPARAZIONE MANUTENZIONE	0^{30}	0,02	0,23
						P	ATTESA			
							TOTALE	226°°	9,40	100%

RIPARTIZIONE TEMPI FASE Ø 12"1/4

Pozzo **NILDE W 1**

---A---	---B---	---C---	---D---	---E---	---F---	CODICE OPER.	DESCRIZIONE TIPO DI OPERAZIONE	TOTALE ORE	TOTALE GIORNI	%
75^{45}	36^{45}	12^{oo}	3^{30}			A	PERFORAZIONE	128^{oo}	5,34	74,88
5^{30}	18^{30}	4^{45}				B	CAROTAGGIO			
						C	TUBAGGIO	28^{45}	1,19	16,89
						D	CONTR. MANIF. E ASSORB.			
						E	PESCAGGIO PRESE BATTERIA			
3^{oo}	1^{oo}					F	LOGS ELETTRICI	4	0,16	2,35
						G	PROVE DI STRATO			
						H	DEVIAZIONE			
			3^{45}	1^{15}		I	APPARECCHIATURA DI SICUR.	5	0,20	2,94
						L	ABBANDONO POZZO			
						M	SPOSTAMENTO IMPIANTO			
						N	VARIE			
						O	RIPARAZIONE MANUTENZIONE			
		5^{oo}				P	ATTESA	5	0,20	2,94
							TOTALE	170^{45}	7,09	100%

RIPARTIZIONE TEMPI FASE Ø 8"½

Pozzo **NILDE W 1**

---A---	---B---	---C---	---D---	---E---	---F---	CODICE OPER.	DESCRIZIONE TIPO DI OPERAZIONE	T O T A L E ORE	GIORNI	%
182°°	64°°	14 30	3 30		1 15	A	PERFORAZIONE	264°°	10,98	36,71
7°°	13 45	1 45			2°°	B	CAROTAGGIO	24	1	3,34
29 30		2				C	TUBAGGIO	31 30	1,32	4,38
						D	CONTR. MANIF. E ASSORB.			
8 45	20 45					E	PESCAGGIO PRESE BATTERIA	29 30	1,23	4,12
15°°	10 30	3°°				F	LOGS ELETTRICI	28 30	1,18	3,97
6 45	15 30					G	PROVE DI STRATO	22 15	0,90	3,04
						H	DEVIAZIONE			
						I	APPARECCHIATURA DI SICUR.			
36°°	114°°	8°°		13 30	24°°	L	ABBANDONO POZZO	195 30	8,16	27,31
15°°	52°°					M	SPOSTAMENTO IMPIANTO	67°°	2,79	9,33
	17°°			20°°		N	VARIE	37°°	1,55	5,15
				1 30		O	RIPARAZIONE MANUTENZIONE	1 30	0,06	0,22
		12 30		5°°		P	ATTESA	17 30	0,73	2,43
							TOTALE	718 15	29,90	100%

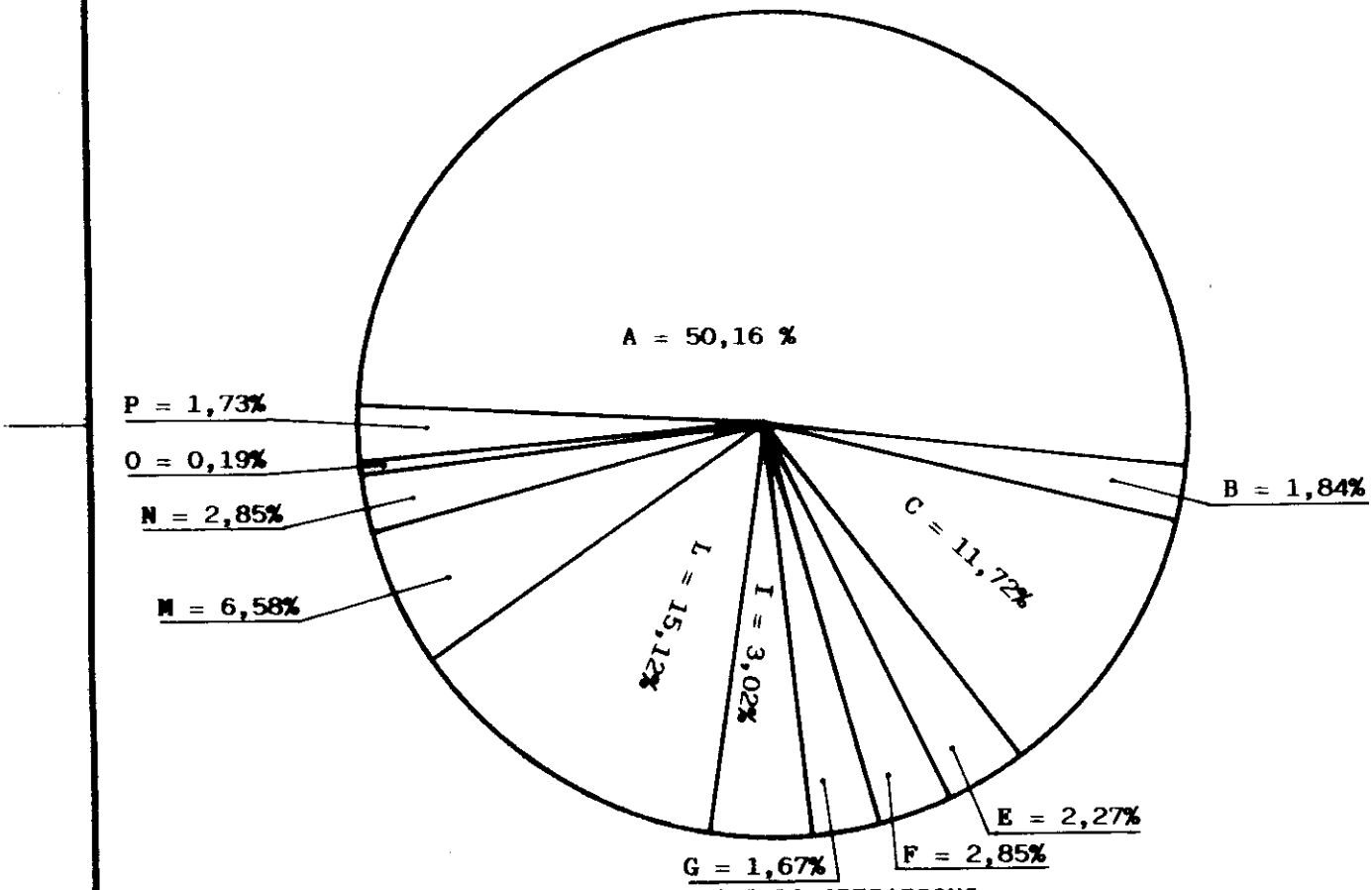
RIPARTIZIONE TEMPI TOTALI

Pozzo NILDE W 1

---A---	---B---	---C---	---D---	---E---	---F---	CODICE OPER.	DESCRIZIONE TIPO DI OPERAZIONE	T O T A L E ORE	GIORNI	%
427 45	147°°	39 45	26 15	2 15	8°°	A	PERFORAZIONE	651°°	27,12	50,16
7°°	13 45	1 15			2°°	B	CAROTAGGIO	24°°	1	1,84
58°°	73 45	19°°			1 15	C	TUBAGGIO	152°°	6,33	11,72
						D	CONTR. MANIF. E ASSORB.			
8 45	20 45					E	PESCAGGIO PRESE BATTERIA	29 30	1,23	2,27
22 30	11 30	3				F	LOGS ELETTRICI	37°°	1,55	2,85
6 45	15°°					G	PROVE DI STRATO	21 45	0,91	1,67
						H	DEVIAZIONE			
	10 15		9°°	3 15	16 45	I	APPARECCHIATURA DI SICUR.	39 15	1,64	3,02
36°°	144 30	8°°		13 30	24°°	L	ABBANDONO POZZO	196°°	8,16	15,12
15°°	52°°	18 30				M	SPOSTAMENTO IMPIANTO	85 30	3,56	6,58
	17°°			20°°		N	VARIE	37	1,55	2,85
	0 30			2°°		O	RIPARAZIONE MANUTENZIONE	2 30	0,10	0,19
		17 30		5°°		P	ATTESA	22 30	0,93	1,73
							TOTALE	1298°°	54,08	100%

Agip SETTORE OPERATIVO SICILIA	POZZO: NILDE W 1	FIGURA N° 11 allegato a: RELAZIONE FINALE COMPILATO: S.M. — DATA: 10/12/87

RIPARTIZIONE TEMPI TOTALI DI PERFORAZIONE



DESCRIZIONE TIPO OPERAZIONI

A - PERFORAZIONE
B - CAROTAGGIO
C - TUBAGGIO
D - CONT. MANIF. E ASSORB.
E - PESCAGGIO E PRESA BATT.
F - LOGS ELETTRICI
G - PROVE DI STRATO
I - APPAR. SICUREZZA
L - ABBANDONO POZZI
M - SPOSTAMENTO IMPIANTO
N - VARIE
O - RIPARAZIONE - MANUTENZIONE
P - ATTESA

4.6 RAPPORTI TUBAGGIO E CEMENTAZIONE COLONNE

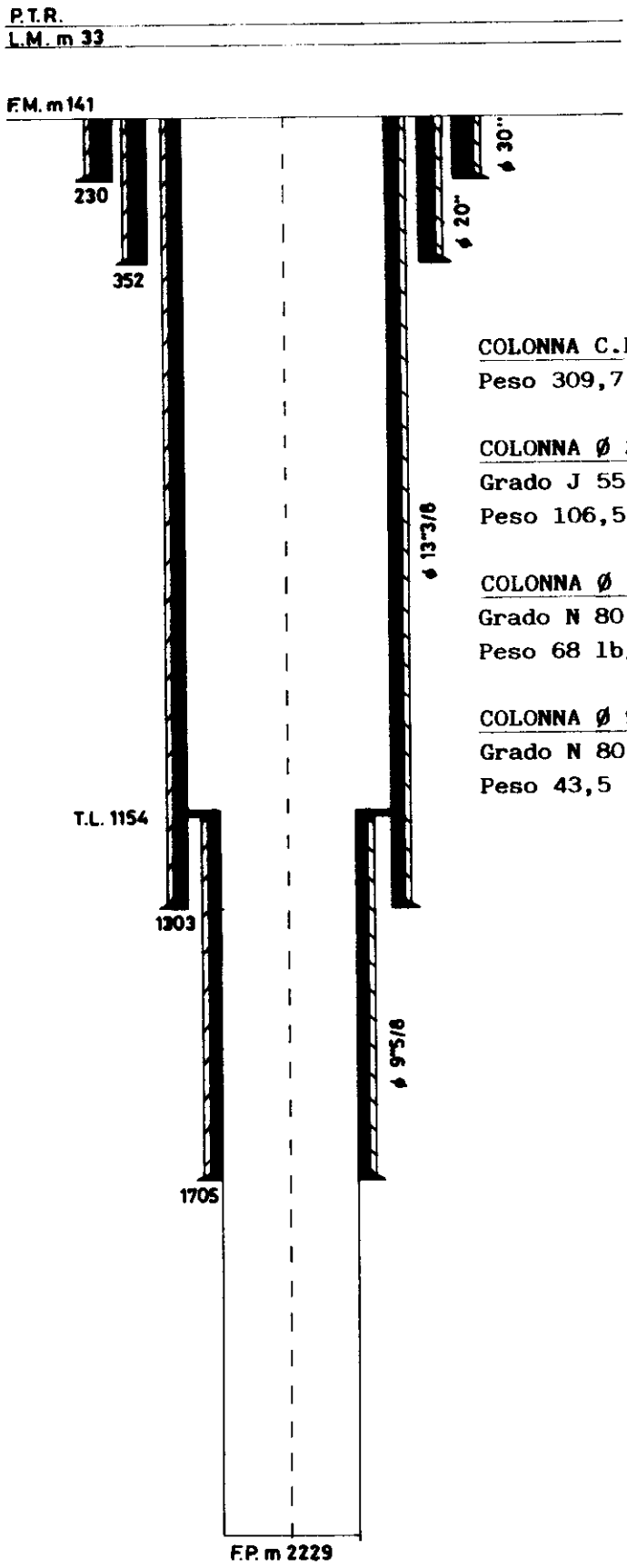
Agip
SESI
SERVIZIO : PERF

NILDE W 1

PROFILO CASING

Fig. 12

COMPILATO	DATA
S.M.	10/12/87



COLONNA C.P. Ø 30"
Peso 309,7 lb/ft

COLONNA Ø 20"
Grado J 55
Peso 106,5 lb/ft

COLONNA Ø 13"3/8
Grado N 80
Peso 68 lb/ft

COLONNA Ø 9"5/8
Grado N 80
Peso 43,5 lb/ft

Agip

Settore SECA

RAPPORTO DI TUBAGGIO E CEMENTAZIONE

Colonna / ~~Liner~~ Ø 30" POZZO NILDE W 1

DATA 26/7/86

Condizioni del pozzo:

Profondità m. 234 Scalpello Ø 26" ~~Eseguito riposso con~~ Allargato 36" Ø

Foro deviato da m. ... a m ... con inclinazione 1° max a m. 234

Diametria eseguita alle ore ... del ... Diametro medio del foro ...

Scarpa colonna precedente Ø ... a m. ...

Composizione colonna

Grado 309,7 spes. ...	Grado ... spes. ...	Grado ... spes. ...	Grado ... spes. ...
dal N. ... al N. ...	dal N. ... al N. ...	dal N. ... al N. ...	dal N. ... al N. ...
da mt. ... a mt. ...	da mt. ... a mt. ...	da mt. ... a mt. ...	da mt. ... a mt. ...
Totale N. ... mt. ...	Totale N. ... mt. ...	Totale N. ... mt. ...	Totale N. ... mt. ...

Equipaggiamento della colonna:

Scarpa a m. 230 ; collare a m. ... ; D.V. a m. ... Testa liner a m. ...

Centralizzatori n° ... Tipo di installazione ... da m. ... a m. ...

Raschiatori n° ... ... da m. ... a m. ...

Stop-collars n° ... ... da m. ... a m. ...

Fango: Tipo ...

Densità ... Visc. API ... Visc. plastica ... Yield point ... Gel 10" ... 10' ...

Svolgimento dell'operazione:

Tubaggio iniziato alle ore 08.00 del 25/7/86 terminato alle ore 22.45 del 25/7/86

Circolazioni intermedie a m. ...

Durata della circolazione di fondo: minuti 15 Portata Q = 1000 l/min.

Tipo di tappi: 1° ... 2° ...

Cuscini separatori: 1° l ... 2° l ... composti da ...

Confezione malta mc. 62 durata minuti 45

Spiazzamento con mc. 3 di H_2O ; durata minuti 5 portata media l/min. 700

Pressione di spiazzamento: media atm ... finale atm 30 C.T. ...

Malta ~~a giorno mc~~ non rilevata a fondo mare

Prova tenuta colonna con pressione: ... atm per ... minuti

Materiale impiegati:

Cemento q 820 Tipo GEOCEM densità della malta 1900 g/l

Miscela cementizia q ... Composizione ... Densità malta ...

Controllo: Term. CBL

Eseguito il ... dopo ... ore dalla fine della cementazione

Durata della registrazione ore ... intervallo registrato da m. ... a m. ...

Top del cemento: Teorico a m. ... Trovato a m. ...

Osservazioni Durante il tubaggio si sono avuti problemi ad imboccare la TGB

PER LA COMMITTENTE

SALIS

Codice 110482

Agip

Settore SECA

RAPPORTO DI TUBAGGIO E CEMENTAZIONE

Colonna / ~~Liner~~ Ø 20" POZZO NILDE W 1

DATA 30/7/86

Condizioni del pozzo:

Profondità m. 356 Scalpello Ø 26" Eseguito ripasso con BIT Ø 26"

Foro deviato da m. ..... a m ..... con inclinazione Ø° max a m. 356

Diametria eseguita alle ore ..... del ..... Diametro medio del foro .....

Scarpa colonna precedente Ø 30" C.P. a m. .....

Composizione colonna

Grado J 55 spes. 106,5	Grado ..... spes.	Grado ..... spes.	Grado ..... spes. .....
dal N. ..... al N.	dal N. ..... al N.	dal N. ..... al N.	dal N. ..... al N. .....
da mt. ..... a mt.	da mt. ..... a mt.	da mt. ..... a mt.	da mt. ..... a mt. .....
Totale N. ..... mt.	Totale N. ..... mt.	Totale N. ..... mt.	Totale N. ..... mt. .....

Equipaggiamento della colonna:

Scarpa a m. 352 ; collare a m. ..... ; D.V. a m. ..... Teste liner a m. .....

Centralizzatori n° .....

Raschiatori n° .....

Stop-collars n° .....

Tipo di installazione: ..... da m. ..... a m. .....; ..... da m. ..... a m. .....; ..... da m. ..... a m. .....

Fango: Tipo AS/AR

Densità 1350 Visc. API ..... Visc. plastica ..... Yield point ..... Gel 10" ..... 10' .....

Svolgimento dell'operazione:

Tubaggio iniziato alle ore 17.00 del 29/7/86 terminato alle ore 01.15 del 30/7/86

Circolazioni intermedie a m. PROVATA CIRCOLAZIONE = OK

Durata della circolazione di fondo: minuti ..... Portata Q = ... l/min.

Tipo di tappi: 1° ..... 2° .....

Cuscini separatori: 1° l ..... 2° l ..... composti da .....

Confezione malta mc. 68 durata minuti 66

Spiazzamento con mc. 4 di H_2O ; durata minuti 7 portata media l/min. 600

Pressione di spiazzamento: media atm ..... finale atm 21 C.T. .....

Malta ~~a giorno mc~~ NON RILEVATA A FONDO MARE

Prova tenuta colonna con pressione: ..... atm per ..... minuti

Materiale impiegati:

Cemento q 435 Tipo GEOCEM densità della malta 1900 g/l

Miscela cementizia q 250 Composizione 3% BENTONITE Densità malta 1520 g/l

Controllo: Term. CBL

Eseguito il ..... dopo ..... ore dalla fine della cementazione

Durata della registrazione ore ..... intervallo registrato da m. ..... a m. .....

Top del cemento: Teorico a m. ..... Trovato a m. .....

Osservazioni CEMENTAZIONE AVVENUTA CON PEDUNCOLO DENTRO CSG 20"

PER LA COMMITTENTE

SALIS

Codice 110482

Agip

Settore SECA

RAPPORTO DI TUBAGGIO E CEMENTAZIONE

Colonna / Liner Ø 13 "3/8 POZZO NILDE W 1

DATA 8/8/86

Condizioni del pozzo:

Profondità m. 1308 Scalpello Ø 17 ½" Eseguito ripasso con BIT Ø 17 ½

Foro deviato da m. ..... a m ..... con inclinazione 1° max a m. 1308

Diametria eseguita alle ore ..... del ..... Diametro medio del foro .....

Scarpa colonna precedente Ø 20" a m. 352

Composizione colonna

Grado N 80 spes. 68 #	Grado ..... spes.	Grado ..... spes.	Grado ..... spes. .....
dal N. 1 al N. 94	dal N. ..... al N.	dal N. ..... al N.	dal N. ..... al N. .....
da mt. ..... a mt. 1163,07	da mt. ..... a mt.	da mt. ..... a mt.	da mt. ..... a mt. .....
Totale N. 94 mt.	Totale N. mt.	Totale N. ..... mt.	Totale N. ..... mt. .....

Equipaggiamento della colonna:

Scarpa a m. 1303 ; collare a m. 1276 ; D.V. a m. / Testa liner a m. /

Centralizzatori n° 42

Raschiatori n° /

Stop-collars n° 42

Tipo di installazione: C1 da m. 1163 a m. 1061; C2 da m. 1061 a m. 365; ..... da m. ..... a m. .....

Fango: Tipo LS

Densità 1240 Visc. API 58 Visc. plastica 14 Yield point 8 Gel 10" 3 / 10' 22

Svolgimento dell'operazione:

Tubaggio iniziato alle ore 02^{30} del 8/8/86 terminato alle ore 15^{30} del 8/8/86

Circolazioni intermedie a m. .....

Durata della circolazione di fondo: minuti 60 Portata Q = 2000 l/min.

Tipo di tappi: 1° SSR 2° SSR

Cuscini separatori: 1° l 3000 2° l 1500 composti da H_2O

Confezione malta mc. 90 durata minuti 90

Spiazzamento con mc. 89 di FANGO ; durata minuti 95 portata media l/min. 1000

Pressione di spiazzamento: media atm 55 finale atm 74 C.T. 110

Malta a giorno mc 1

Prova tenuta colonna con pressione: 110 atm per 10 minuti

Materiale impiegati:

Cemento q 396 Tipo GEOCEM "G" densità della malta 1900 g/l

Miscela cementizia q 427 + 10 Composizione GEOCEM "G" + 3% BENTONITE Densità malta 1520 g/l

Controllo: Term. CBL

Eseguito il ..... dopo ..... ore dalla fine della cementazione

Durata della registrazione ore ..... intervallo registrato da m. ..... a m. .....

Top del cemento: Teorico a m. ..... Trovato a m. .....

Osservazioni DOPO 72 M^3 DI SPIAZZAMENTO: A GIORNO FANGO CONTAMINATO

" 88 M^3 MALTA A GIORNO

PER LA COMMITTENTE

BARDINO

Codice 113482

Agip

Settore SECA

RAPPORTO DI TUBAGGIO E CEMENTAZIONE

Colonna / Liner Ø 9"5/8 POZZO NILDE 1 W

DATA 15/8/86

Condizioni del pozzo:

Profondità m. 1707 Scalpello Ø 12" 1/4 Eseguito ripasso con / Ø /

Foro deviato da m. 1707 a m / con inclinazione 2° max a m.

Diametria eseguita alle ore / del / Diametro medio del foro /

Scarpa colonna precedente Ø 13 3/8 a m. 1303

Composizione colonna

Grado N 80 spes. 43,5 ‡	Grado spes.	Grado spes.	Grado spes.
dal N. 1 al N. 42	dal N. al N.	dal N. al N.	dal N. al N.
da mt. a mt.	da mt. a mt.	da mt. a mt.	da mt. a mt.
Totale N. mt. 551,9	Totale N. mt.	Totale N. mt.	Totale N. mt.

Equipaggiamento della colonna:

Scarpa a m. 1705 ; collare a m. 1678 ; ~~XXX~~ LC a m. 1651 Testa liner a m. 1153

Centralizzatori n° 21 — Tipo di installazione: C1 da m. 1705 a m. 1605; C2 da m. 1605 a m. 1342; da m. a m.

Raschiatori n° /

Stop-collars n° 21

Fango: Tipo LS

Densità 1250 Visc. API 68 Visc. plastica 15 Yield point 11 Gel 10" 2 10' 23

Svolgimento dell'operazione:

Tubaggio iniziato alle ore 07.00 del 15/8/86 terminato alle ore 16.15 del 15/8/86

Circolazioni intermedie a m. /

Durata della circolazione di fondo: minuti 60 Portata Q = 1280 l/min. P = 48 ATM

Tipo di tappi: 1° / 2° WIPER PLUG

Cuscini separatori: 1° l 3000 2° l / composti da H_2O + 0,4% H 14 E 0,2% CFR 2

Confezione malta mc. 32 durata minuti 30'

Spiazzamento con mc. 29 di FANGO ; durata minuti 40 portata media l/min. 750

Pressione di spiazzamento: media atm / finale atm 56 C.T. 150 ATM

Malta a giorno mc /

Prova tenuta colonna con pressione: 150 atm per 5' minuti

Materiale impiegati:

Cemento q 425 Tipo GEOCEM densità della malta 1900 GPL

Miscela cementizia q Composizione / Densità malta /

Controllo: Term. CBL

Eseguito il / dopo / ore dalla fine della cementazione

Durata della registrazione ore / intervallo registrato da m. / a m. /

Top del cemento: Teorico a m. / Trovato a m. /

Osservazioni DURANTE LE OPERAZIONI LIVELLI OK

PER LA COMMITTENTE

SALIS

Codice 110482

IMCO SERVICES ITALIANA SpA
Via E. Fermi, 11
20090 ASSAGO (MI)

AGIP SpA

RELAZIONE FINALE

POZZO : NILDE W1

Milano, 13 Luglio 1987

Chrono 87 - 154/A

IMCO SERVICES ITALIANA SpA

NILDE W 1

Intervallo : 0 ÷ 235 mt.
Foro 36" per CP 26"
Tipo fango : acqua di mare e cuscini viscosi

PRODOTTI USATI	QL.	Lit/QL	COSTO
Bentonite	90	19.800	1.782.000
Brinegel	67	51.500	3.450.500
Soda Caustica	3	57.500	172.500
Calce idrata	2	12.500	25.000
			5.430.000

IMCO SERVICES ITALIANA SpA

NILDE W 1

Intervallo : 235 ÷ 356 mt.
Foro 26" per csg 20"
Tipo fango : AS

PRODOTTI USATI	QL.	Lit/QL.	COSTO
Barite	440	22.000	9.680.000
Bentonite	60	19.800	1.188.000
Soda Ash	2	37.000	74.000
Brinegel	65	51.500	3.347.500
RD 111	2	189.000	378.000
Soda Caustica	8	57.500	460.000
			15.127.500

IMCO SERVICES ITALIANA SpA

NILDE W1

Intervallo : 356 ÷ 1308 mt.
Foro 17"½ per csg 13"3/8
Tipo fango : LS

PRODOTTI USATI	QL.	Lit/QL.	COSTO
Bentonite	150	19.800	2.970.000
Soda Caustica	11	57.500	632.500
Barite	232	22.000	5.104.000
RD 111	28.5	189.000	5.386.500
Soda Ash	6	37.000	222.000
CMC LVT	3.5	230.000	805.000
CMC HVT	1.5	262.500	393.750
IMCO THIN	19.5	133.000	2.593.500
M D	fusti 2	420.000	840.000
			18.947.250

IMCO SERVICES ITALIANA SpA

NILDE W 1

Intervallo : 1308 ÷ 1707 mt.
Foro 12"1/4 per csg 9"5/8
Tipo fango : LS

PRODOTTI USATI		QL.	Lit/QL.	COSTO
Bentonite		70	19.800	1.386.000
Soda Caustica		4	57.500	230.000
Barite		238	22.000	5.236.000
RD 111		25	189.000	4.725.000
Soda Ash		5	37.000	185.000
CMC LVT		1.5	230.000	345.000
IMCO THIN		22.5	133.000	2.992.500
Bicarbonato		5	42.000	210.000
Con det	fusti	1	420.000	420.000
				15.729.500

IMCO SERVICES ITALIANA SpA

NILDE W 1

Intervallo : 1707 ÷ 2229 mt.
Foro 8"½
Tipo fango : BS

PRODOTTI USATI	QL.	Lit/QL.	COSTO
Bentonite	120	19.800	2.376.000
Soda Caustica	2	57.500	115.000
Barite	30	22.000	660.000
RD 111	4	189.000	756.000
Soda Ash	7	37.000	259.000
CMC LVT	4	230.000	920.000
CMC HVT	13.5	262.500	3.543.750
PAC	2	553.000	1.106.000
			9.735.750

IMCO SERVICES ITALIANA SpA

NILDE W 1

CONSUMO TOTALE

PRODOTTI USATI		QL.	LIT/QL.	COSTO
Bentonite		490	19.800	9.702.000
Soda Caustica		28	57.500	1.610.000
Barite		940	22.000	20.680.000
RD 111		59.5	189.000	11.245.500
Soda Ash		20	37.000	740.000
CMC LVT		9	230.000	2.070.000
CMC HVT		15	262.500	3.937.500
IMCO THIN		42	133.000	5.586.000
Bicarbonato		5	42.000	210.000
PAC		2	553.000	1.106.000
Brinegel		132	51.500	6.798.000
Calce idrata		2	12.500	25.000
MD	fusti	2	420.000	840.000
Con Det	fusti	1	420.000	420.000
				64.970.000

IMCO Services
A division of Halliburton Company
2400 West Loop South, P.O. Box 22605
Houston, Texas 77227 A/C 713 671-4800

DAILY DRILLING MUD ADDITIONS

OPERATOR AGIP SPA WELL NAME AND NO. NILDE W 1

DATE (19 86)	DEPTH (ft) MT	BENTONITE QL.	BRINEGEL QL.	SODA CAUSTICA QL.	CALCE IDRATA QL.	BARITE QL.	RD 111 QL.	SODA ASH QL.	CMC LVT QL.	CMC HVT QL.	M D QL.	IMCO THIN FT.	QL.	DAILY COST
		Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	
25/07	230	90	67	3	2									
26/07	235													
27/07	245	60	65			180	0.5	2						
28/07	356			4										
29/07	356			4		260	1.5							
30/07	356													
31/07	362	60		2		90		1	1.5	1.5				
01/08	500			1			2		1		1			
02/08	678			1			4.5	1	1					
03/08	823	40		1			4	1			1	2		
04/08	955	50		1			5	1				2		
05/08	1118			1			5	1				4		

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Houston, Texas 77227 A/C 713 671-4800

DAILY DRILLING MUD ADDITIONS

OPERATOR AGIP SPA WELL NAME AND NO. NILDE W 1

DATE (19 86)	DEPTH (ft) MT	BENTONITE	SODA CAUSTICA QL.	BARITE QL.	RD 111 QL.	SODA ASH QL.	CMC LVT QL.	CMC HVT QL.	IMCO THIN QL.	BICARBONATO QL.	CON DET QL.	FT	Unit Cost	DAILY COST
06/08	1225	1	20	4	1			5	5					
07/08	1308	1	122	4				4.5	2					
08/08	1308	2						2						
09/08	1308		73					2	3					
10/08	1408	1	140	5	3			5						
11/08	1526	1		5				5		1				
12/08	1624		25	5	1			5.5						
13/08	1683			5				3						
14/08	1707	1		2				2						
15/08	1707	20												
16/08	1707	50	1		3	1	1.5		2					
17/08	1707				4	3								

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Houston, Texas 77227 A/C 713 671-4800

DAILY DRILLING MUD ADDITIONS

OPERATOR AGIP SPA WELL NAME AND NO. NILDE W 1

DATE (19)	DEPTH (ft)	BENTONITE QL.	Unit Cost	SODA CAUSTICA QL.	Unit Cost	BARITE QL.	Unit Cost	RD 111 QL.	Unit Cost	SODA ASH QL.	Unit Cost	CMC LVT QL.	Unit Cost	CMC HVT QL.	Unit Cost	IMCO THIN QL.	Unit Cost	BICARBONATO QL.	Unit Cost	PAC QL.	Unit Cost	DAILY COST
86	MT																					
18/08	1708	50		1				1		2		1.5				1						
19/08	1726																					
20/08	1740	30										1				1						
21/08	1740																					
22/08	1823	10										1										
23/08	1858											1										
24/08	1930											1										
25/08	1993											1										
26/08	2048											2										
27/08	2112			1						1		2										
28/08	2122				30							1										
29/08	2171	10								1		2										

IMCO Services
A division of Halliburton Company
2400 West Loop South, P.O. Box 22505
Houston, Texas 77227 A/C 713 671-4800

DAILY DRILLING MUD ADDITIONS

OPERATOR AGIP SPA WELL NAME AND NO. NILDE W 1

DATE (19) 86	DEPTH (ft) MT	BENTONITE QL.	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	Unit Cost	DAILY COST
30/08	2171	20																					
31/08	2229																						
01/09	2229																						
02/09	2229																						

IMCO Services
A Division of HALLIBURTON Company
2400 West Loop, South P.O. Box 22605
Houston, Texas 77027 A.C. 713 671 4800

RECORD OF DRILLING MUD TESTS

COMPANY	
AGIP SPA	
WELL NAME & NO.	
NILDE W 1	

API WELL NO.	STATE	COUNTY	WELL	S/T

FIELD	COUNTY	STATE
SECA	TRAPANI	ITALIA

CONTRACTOR — Sec. — T — R

IMCO REPRESENTATIVE: CROSE - BOWDLER

TYPE MUD: AS - AR - LS

CASING			HOLE SIZE	NO. BITS	NO. DAYS
26 CP	@	235	36		
20	@	356	26		
13"3/8	@	1308	17"½		
9"5/8	@	1707	12"1/4		
	@		8"½		

DATE '86	DEPTH MT	WEIGHT lbs/gal GR/LT	VISCOSITY sec	PLASTIC VIS. cp	YIELD VALUE lbs/100 ft²	GEL STRENGTH lbs/100 ft² 10 SEC	GEL STRENGTH lbs/100 ft² 10 MIN	pH	FILTRATE cc	HTHP FILTRATE cc @ TEMP °F	CAKE 32nd" IN	ALKALINITY Pf	ALKALINITY Mf	ALKALINITY Pm	SALT ☐ CHLORIDE ☐ ppm ☐ gpg	CALCIUM ION ppm	SAND % VOL	SOLIDS % VOL	OIL % VOL	WATER CONTENT % VOL	METHYLENE BLUE me/ml	METHYLENE BLUE lbs/bbl
25/07	230	1060	85																			
26/07	235	1060	80																			
27/07	245	1060	80	8	25	10	12	9				0.1	0.2		19.8	0.8		3		97		
28/07	356	1080	59	7	26	11	14	9.5				0.1	0.2		24.8	1		4		96		
29/07	356	1100	59	10	25	12	16	9				0.1	0.2		25.2	1		5		95		
30/07	356	1100	59	10	25	12	16	9				0.1	0.2		25.2	1		5		95		
31/07	362	1070	56	8	9	2	6	10.5	10.2		2	0.3	0.8		4.3	0.1		3		97		
01/08	500	1090	55	8	9	6	13	9.5	11.6		2	0.3	0.6	0.5	5.7	0.06	TR	4		96		
02/08	678	1180	57	11	7	3	20	8.5	8.9		2	0.1	0.3	0.2	4.9	0.06	TR	10		90		
03/08	823	1160	58	11	8	3	20	8.5	8.6		2	0.1	0.3	0.2	4.9	0.04	TR	9		91		
04/08	955	1210	54	10	7	2	18	9	9.2		2	0.2	0.4	0.4	5.1	0.02	TR	11		89		
05/08	1118	1220	56	12	8	2	17	9	9.4		2	0.2	0.4	0.3	5.3	TR	TR	12		88		
06/08	1225	1230	63	13	11	4	23	8.5	8.2		2	0.1	0.3	0.2	5.6	0.03	TR	12		88		
07/08	1308	1240	52	10	7	2	18	8.5	8.5		2	0.1	0.3	0.2	5.4	0.04	TR	15		85		
08/08	1308	1240	58	14	8	3	22	9	9		1.5	0.1	0.4	0.3	5	TR	TR	14		86		
09/08	1308	1240	58	14	8	3	22	9	9		1.5	0.1	0.4	0.3	5	TR	TR	14		86		
10/08	1408	1240	55	13	8	4	25	11	8		1.5	0.1	1.8	2.3	5.4	0.2	TR	15		85		
11/08	1526	1240	56	15	10	3	25	10.5	7.8		1.5	0.5	0.9	1.4	5.4	TR	TR	16		84		

IMCO Services
A Division of HALLIBURTON Company
2400 West Loop South, P.O. Box 22605
Houston, Texas 77027 A.C. 713 621 4800

RECORD OF DRILLING MUD TESTS

CASING	HOLE SIZE	NO. BITS	NO. DAYS
@			
@			
@			
@			
@			

IMCO REPRESENTATIVE CROSE - BOWDLER

TYPE MUD LS - BS

COMPANY AGIP SPA

WELL NAME & NO. NILDE W 1

API WELL NO.	STATE	COUNTY	WELL	S/T

FIELD SECA | COUNTY TRAPANI | STATE ITALIA

CONTRACTOR | Sec. | T | R

DATE '86	DEPTH MT	WEIGHT GR/LT	VISCOSITY sec	PLASTIC VIS cps	YIELD VALUE lbs/100 ft²	GEL STRENGTH 10"	10'	pH	FILTRATE	CAKE	ALKALINITY Pf	Mf	Pm	SALT / CHLORIDE ppm / gpg	CALCIUM ION ppm	SAND % VOL	SOLIDS % VOL	OIL % VOL	WATER CONTENT % VOL	METHYLENE BLUE me/ml	lbs/bbl
12/08	1526	1240	56	15	10	3	25	10.5	7.8		1.5	0.5	0.9	1.4	5.4	TR	TR	16		84	
13/08	1680	1240	62	15	10	2	21	10.5	7.6		1.5	0.5	0.7	1.2	4.5	TR	TR	15		85	
14/08	1707	1240	63	14	11	2	23	10	7.4		1.5	0.5	0.8	1.2	4.5	TR	TR	15		85	
15/08	1707	1240	68	15	11	2	23	10	7.2		1.5	0.5	0.7	1.1	4.5	TR	TR	15		85	
16/08	1707	1240	68	15	11	2	23	10	7.2		1.5	0.5	0.7	1.1	4.5	TR	TR	15		85	
17/08	1707	1240	59	15	11	2	21	12	8		1.5	1.1	1.4	1.8	4.5	0.19	TR	15		85	
18/08	1708	1060	44	7	5	1	6	12	8.8		1	1.2	2.2	2.7	5	TR	TR	3		97	
19/08	1726	1060	44	7	5	1	6	12	8.8		1	1.2	2.2	2.7	5	TR	TR	3		97	
20/08	1740	1060	44	9	5	1	7	11.5	8.8		1	1.2	2.2	2.7	5	TR	TR	3		97	
21/08	1740	1060	44	9	5	1	7	11.5	8.8		1	1.2	2.2	2.7	5	TR	TR	3		97	
22/08	1823	1080	43	9	5	1	7	11.5	8.6		1	1.3	2.1	2.2	5	TR	TR	4		96	
23/08	1858	1080	45	9	5	1	8	11.5	8		1	1.3	2.1	2.2	5	TR	TR	4		96	
24/08	1930	1090	45	11	6	1	8	11	8		1	0.8	1.4	1.6	5	TR	TR	4		96	
25/08	1993	1100	45	12	6	1	8	11	8.2		1	0.5	1.2	1.1	5	TR	TR	4		96	
26/08	2048	1100	44	11	5	1	7	9.5	8.4		1	0.4	0.9	1	4.5	TR	TR	4		96	
27/08	2112	1100	45	11	6	1	9	9.5	8.4		1	0.4	0.7	0.9	4.5	TR	TR	4		96	
28/08	2122	1100	45	11	6	1	9	9.5	8.4		1	0.4	0.7	0.9	4.5	TR	TR	4		96	
29/08	2171	1100	47	10	5	2	9	9.5	8.6		1	0.4	1.3	0.9	4.5	TR	TR	5		95	

IMCO Services
A Division of HALLIBURTON Company
2400 West Loop South · P.O. Box 22605
Houston, Texas 77027 · A.C. 713/621-4800

RECORD OF DRILLING MUD TESTS

CASING	HOLE SIZE	NO. BITS	NO. DAYS
@			
@			
@			
@			
@			

COMPANY: AGIP SPA

WELL NAME & NO.: NILDE W 1

API WELL NO.	STATE	COUNTY	WELL	S/T

FIELD: SECA — COUNTY: TRAPANI — STATE: ITALIA

CONTRACTOR

Sec. | T | R

IMCO REPRESENTATIVE: CROSE - BOWDLER

TYPE MUD: BS

DATE '86	DEPTH MT	WEIGHT ☐ lbs/gal ☐ lbs/cu ft GR/LT	VISCOSITY sec	PLASTIC VISCOSITY cps	YIELD VALUE lbs/100 ft²	GEL STRENGTH 10 sec	GEL STRENGTH 10 min	pH	FILTRATE API cc	FILTRATE HT/HP 500 psi 175°F cc	API FILTER CAKE 32nds	ALKALINITY Pf	ALKALINITY Mf	ALKALINITY Pm	☐ SALT ☐ CHLORIDE ☐ ppm ☐ gpg	CALCIUM ION ppm	SAND % VOL	SOLIDS % VOL	OIL % VOL	WATER CONTENT % VOL	METHYLENE BLUE me/ml	METHYLENE BLUE lbs/bbl
30/08	2192	1120	45	10	5	2	9	9.5	9.2		1	0.5	1.3	0.8	4.8	0.01	TR	6		94		
31/08	2229	1125	46	11	5	2	7	9	9.4		1	0.3	0.9	0.6	5.1	TR	TR	6		94		
01/09	2229	1130	43	10	4	2	5	9	9.6		1	0.3	0.8	0.6	5.2	TR	TR	6		94		
02/09	2229	1150	38	7	3	1	3	8.5	10.6		1	0.1	0.4	0.5	5.3	0.01	TR	5		95		

O C E A N S I S M I C A S.p.A.

M A R I N E S I T E S U R V E Y

N I L D E W 1 Location

Final report for O.K

A G I P S.p.A.

OCEANSISMICA SpA

OCEANSISMICA

C O N T E N T S

L I S T O F F I G U R E S

A P P E N D I C E S

E N C L O S U R E S

1.0 I N T R O D U C T I O N

From December 2nd to December 5th 1985 the OCEANSISMICA Team on board of the m/v "Minerva", carried out a geophysical survey on the well site NILDE W 1 located about 50 Km to the South-West offshore Marsala (see Fig.1).

In accordance with specifications, the acoustic measurements (bathymetry, seismic profiling and side scan sonar), were taken simultaneously on the basis of a 24 hours working day.

The location plans with the ship's tracks were recorded by means of an automatic cartographical system after automatic acquisition of positioning data.

The present report was edited on board of the survey vessel by means of an IBM-XT Personal Computer.

This report contains a description of the survey equipment, operational parameters and methods used for the data reduction. A presentation of the maps showing the data collected is also included.

1.1 Scope of work

The scope of the survey was to investigate the surface and subsurface of the seafloor in order to identify its litho-morphological features, determine the trend of sedimentary sequences, ascertain the presence of the gas pockets, man-made objects, if any, and acquire any other information useful to the drilling operations and their safety.

1.2 Survey specifications and production

The survey area is a 3.5km x 3km rectangle N-S oriented, having the following coordinates:

	GAUSS BOAGA	GEOGRAPHICAL
NILDE W 1 <	2247887.0 E	Lat. 37 35'43".98 N
	4165478.0 N	Long. 11 55'04".95 E

The analogue survey grid is shown in Fig.2 and the digital survey grid is shown in fig.3, both at the scale of 1:10.000.

According to AGIP specifications, sixteen lines (200 m spacing) along the N - S direction and six orthogonal lines (500 m spacing) for a total of 86 Km were run with both Echosounder and High resolution digital multi-channel seismic system, while eighteen lines (200 m spacing) along the E - W direction and three orthogonal lines (500 m spacing) were run with

Echosounder , Side Scan Sonar, Sub-Bottom Profiler and Uniboom, for a total of 75 km.

A program of gravity coring, replaced with the grab sampling for the adverse weather condition, was also required by the Client to provide samples of the seafloor sediments.

Three shore stations were used for the position fixing requirements. Their coordinates are :

a) ERICE

E = 2307089.50 Lat. 38 02'24".19 N
N = 4213107.34 Long. 12 34'26".19 E
H = 550 m

b) MARETTIMO C.V.

E = 2262732.23 37 57'08".33 N
N = 4204638.32 12 04'19".54 E
H = 258 m

c) PARTANNA

E = 2334463.37 37 44'33".83 N
N = 4179427.49 12 53'39".52 E
H = 510 m

1.3 Survey Diary

- The digital survey was performed from December 2nd to December 3rd.
- The analogue survey was performed from December 3rd to December 5th.
- The seafloor sampling was performed on December 9th.

2.0 WORKS AND PROCEDURES

2.1 Calibration,settings,equipment description

2.1.1 Survey Positioning and Data Acquisition

A Syledis navigation system was used for all survey position fixing requirements.

The system, consisting of the two mobiles and four beacons to be employed in this survey, was calibrated on December 1st between the stations of Erice (Agip) and Capo Lilibeo (Agip) on a baseline of 29079 m.

The on board equipment consisted of 2 mobiles (one as spare) interfaced to a Qubit trac IV B system and an H.P. 9872 c plotter.

The Syledis was operated in a range / range mode, interrogating three beacons at all times.

The range information was used to calculate the ship's position by means of the navigation software based on the use of a the Qubit trac IV interfaced coupled to a Autotrak coupled to the Echosounder, to

obtain the automatic acquisition of the bathymetric data.

The navigation system produces a least-square adjusted position in Gauss Boaga and Geographic coordinates together with quality control data of least-square residuals and standard deviation.

The Gauss Boaga Projection used International spheroid, Monte Mario Datum and Central Meridian of 15 degrees.

Position fixing was initiated by the navigation computer on distance based calculation at intervals of 100 m for the analogue survey and 125 m for the digital survey.

A hard-copy print-out of all relevant navigation/ echosounding data was produced on the Qubit trac IV printer and simultaneously logged on a micro flexible disk (3.75") for post plotting.

Fix closures for both analogue and digital seismic records were triggered by the navigation system via a microsystem relay box.

The helmsman received all necessary information for an accurate steering of the ship from a remote visual display installed on the bridge.

An HP 9872c track plotter was also added to the system. On completion of the survey, post-plotting of navigation and bathimetric data was done on board by

means of an H.P.7585 plotter coupled to the Qubit trac IV b .

The configuration of the Navigation/Post-plotting operational system is shown in Fig.5.

2.1.2 Hydrographic Echo Sounder

An Elac Laz 721 dual frequency (30-210 KHz) hydrographic echo-sounder, coupled to the Qubit trac IVb Navigation/Acquisition System, was used for the automatic acquisition of the bathymetric data during the survey program.

The system utilises two transducers, operating at frequencies of 30 kHz and 200 kHz simultaneously, with an accuracy of 0.5 % of the recording range.

The transducer housing was mounted on a special over-the-side rig, welded to the hull of the vessel with an immersion of 1.50 m below the water surface. The position of the transducers is shown in Fig.6 of this report.

The recorder's zero line was adjusted to compensate for the depth of the trasducers below the sea surface and the echosounder was calibrated for the correct speed of sound in water by means of a bar-check carried out at depths of 10, 20 and 30 metres at the start of the survey period.

In order to record the correct depth, the echosounder's controls has been adjusted for a velocity

of sound in sea water of 1500 metres per second.

2.1.3 Side Scan Sonar

The survey was carried out with a Klein Hydroscan Side Scan Sonar. This system comprises a ballasted "tow-fish" model 442, containing two laterally mounted 100 kHz transducers, 600 metres of armoured logging cable on a power winch, a transceiver and a Klein model 531T dual channel recorder.

The transducer housing consists of a streamlined hydrodynamically balanced body about 1 m long containing two sets of transducers scanning the seafloor on either side of the ship's track. The ultrasonic beam is slightly depressed from the horizontal with the axis of the main lobe pointing 10 degree downwards. The horizontal beam-windth is narrowed down to 2 degrees.

This ensures a reasonable transverse resolution even at the largest range.

Signal returns from the seafloor to the transducers are transmitted via cable by a driver, thereby minimising signal loss and distortion in long cables, enabling the cable to be thinner and eliminating cross-talk.

Each returning signal is plotted on recorder, at the position corresponding to the time it was received after the outgoing pulse. The gain and AGC controls are

used to optimize the record quality.

This position will shift across the paper proportionally to the selected sweep range.

The strenght of the return signal depends on the properties of the seafloor's materials as well as morphology.

The range used, according to specifications, is 150 m per channel. This provide an almost 50% overlap of seafloor coverage with a line spacing of 200 m.

In order to optimize the recordings the fish is towed at an optimum heigth above the seafloor kept as close as practicable to 1/10 of the water depth.

2.1.4 Analogue Seismic Profiling Equipment

An O.R.E. model 140 Sub Bottom Profiling System and an E.G.& G. model 230-1 Uniboom was used as the analogue reflection seismic source during the survey.

The O.R.E. High Power Multi-Frequency Sub-Bottom Profiling System is designed to obtain a very high resolution of the first strata of the sub-bottom.

It consists of a complex of four trasducers, mod.O.R.E. 137-A with working frequencies between 3.5 and 7 kHz, and a related beamwidth variant from 55 degrees to 30 degrees.

An O.R.E. model 140 transceiver, coupled to the complex of transducers, allows the control of several parameters, such as frequency, gain, energy level,

bandwidt, etc. Output power is adjustable between 0-10 KW during the key-pulse with operating frequencies varying from 1 to 12 KHz. The receiver sensitivity input is about 30 microvolt RMS.

Records are obtained by transmitting high-power pulses of acoustic energy from a set of transducers mounted on an over-the-side rig, fixed to the hull of the vessel (see Fig.6) so that the plates of the transducers are supported at a depth of approx. one metre below the water level.

The penetration and reflection are dependant on the properties of the sub-bottom materials, as well as on the power and carrier frequency of the signal.

The reflected pulses are detected by the same acoustic trasducers used for trasmission and the resulting electrical signal is recorded on a precision graphic recorder EPC model 3200.

An E.G.& G. Uniboom (Unit Pulse Boomer) system was also used as the analogue reflection seismic source.

It consists of a towed sound source, an electrical power supply, a towed receiver (usually an hydrophone array) whose signal is subject to an amplification and to a frequency filtering before graphic recording.

The sound source provides an acoustic signal caused by the discharge of a capacitor bank (E.G.& G. 232- A Power Supply / 231-A Trigger Capacitor Bank) in an

electromagnetic transducer. The maximum output power is 500 joule with 4 kV applied to the capacitors.

Penetration of the pulse in the sub-bottom greatly depends on the seafloor characteristics; under favourable conditions values up to 100 metres can be achived.

The theoretical resolution of the system is of the order of several centimeters, but it is greatly influenced by the characteristics of the receiver and by the towing technique.

The reflected acoustic pulses were detected by means of an E.G.& G. model 256 Single Channel Hydrophone towed behind the survey vessel. The towing arrangement mantains the hydrophone cable at a depth of approximately 0,5 metres in the quietest possible water, on the apposite side of the wake from the source, thereby minimising the effects of the sea surface return and of the direct wave, and reducing the strenght of the first seafloor multiple.

The active section of the hydrophone cable contains 15 sensing elements, the signals from which are summed to produce an enhanced, single-channel output.

2.1.5 High Resolution Digital Multi-channel Seismic System

The survey was carried out with the following seismic system :

1) Texas Instruments "DFS V" digital acquisition system

2) Sparker energy source

3) PRAKLA twenty four traces streamer system.

The "DFS V " is one of the most modern digital seismic recording systems, with a high level of reliability. Its main advantages are :

- High rate speed (2 ms with 120 channels)
- Complete testing facilities, allowing for the detection and displaying of errors in 66 conditions
- Decimal value reading
- Compact size and light weigth characteristics
- Low power consumption

The " DFS V " employed consists of three principal sections:

1) Analog module

2) Control module

3) Tape transport

1) Analogue module

In relation to seismic channels used and on the basis of sample rate, it is possible to use one or more analog modules.

One module configuration has been used during this

survey cause of only 24 seismic channels predisposition.

Through analog module, signals coming from the streamer are filtered, preamplified and multiplexed and it also provides to do some tests on the cable.

2) Control module.

This module controls the whole system (tape transports, analogue module, recording and sample times), and it also provides to format and digitalization of recording signals; playback and monitoring on an electrostatic camera are also achievable.

Particularly important are auxiliary functions of which DFS V is provided : time break, data filters, frequency reference, shot point seismic amplifier, auxiliary channels. Time break is used to determine the true shot instant,it must coincide with the " start of date" on the tape.

According to evit line delay or electrical noises and for the correct time break determination, it was necessary to use an optical fibre. It provides to transmit the light pulse from the gap (caused by the sparker at the shot instant), to a receiver (at the other cable extremity), which operates a conversion of the light pulse in an electrical signal successively transmitted to the control module.

One of the six data filter channels (with the same filtering setting of the seimic channels) was employed to obtain the "signature"; the relative signal is fournished by a further hydrophone placed by the source and gives indications of the frequency reply and spectrum.

By means of the auxiliary channels (four in the configuration we used) we had the possibility of simultaneous tape and camera recording of :

- Time break on channel 1
- Signature on channel 2
- Reference frequency on channel 4

The electrostatic camera model ERC 10c SIE we used in this survey, provided for an instantaneous check of tape recording quality.

A simoultaneous analogic recording was also required; it was realized by means of an EPC model 3200s graphic recorder, employing one of the two channels to record the analogic signal coming from a ministreamer (filtering 200 - 800 Hz) and the other for the recording of a signal coming from one of the 24 seismic channels of DFS V.

3) Tape transports

The coupling of two tape transport modules, with automatic commute and rewind, allows to obtain a digital seismic data recording in SEG B - 1600 bpi format.

The sparker energy source utilised for the digital data acquisition was a Teledyne mod. 27330/27380 unit.

On receipt of a fire command the stored electrical energy is discharged into a multitip complex, composed by twelve pair of elements assembled on a cable whose sinking is controlled by two or more buoies.

Explosively formed plasma bubbles arise at each discharge point and expand rapidly,generating a positive acoustic pulse along spherical compressional wave - front. As bubble expansion continues the internal pressure reduces until it is exceeded by water pressure and the bubbles collapse, creating a negative pulse. The bubbles continue to oscillate, producing minor "bubble pulses" until all their energy has been dissipated.

During this survey the multitip complex was towed at a depth of approximately three metres.

The seismic streamer used to detect the reflected pulses is a 24 channel PRAKLA. This is made up of 75 metres of lead-in section, one 50 metres strecth section, six 50 metres active section, a further 50 m stretch section and approximately 80 metres of rope trailing a tail buoy. Each active section contains four data channels, each of which (10 metres in lenght) contains a group of 16 hydrophones; the distance between two adjacent trace centers is 12.5 metres.

Three depth sensors were included in the streamer, forward of channels 1, 13 and after the channel 24, to monitor head and tail depths of the cable.

The skecth of operative system is shown in Appendix 5.

2.2 Survey Vessel

The survey was conducted from the M/V "Minerva", an italian survey vessel, supplied by AGIP, that has the following principal characteristics :

Length	60 m	Tonnage	635 lt
Breadth	8.90 m	Main Engine	1800 HP
Draft	3.0 m	Accomodation	16 p.

For further information see Fig.6

2.3 SURVEY TEAM

The Oceansismica team was composed as follows:

M.IOCCA	:	Party Chief
V.RICCIARDI	:	Geophysicist
C.DEL SETTE	:	Senior Electronic Engineer
S.MURRAY	:	Senior Electronic Engineer
L.CIACCIA	:	Junior Electronic Engineer
O.DEL VECCHIO	:	Junior Electronic Engineer
P.GALASSO	:	Senior Navigator/Surveyor
V.FERRARA	:	Senior Navigator/Surveyor
M.MENAPACE	:	Land Station Technician
M.VANNINI	:	Land Station Technician

AGIP Representative : Mr. R.MAROZZI

2.4 Operational Parameters

The geophysical equipment was enployed with the following operational parameters :

- for the echosounder a sound speed of 300 m/s and a scale 100-200 m was used. The recorder zero line was adjusted to compensate for the depth of the transducer's plates below sea level.

- the Side Scan Sonar was employed with a scale of 200 meters per side; the tow-fish was kept at a distance of 260 m from the antenna.

- the Uniboom, with an energy output of 400 Joules, was fired every 250 milliseconds and was towed at a distance of 20 meters from the vessel; the hydrophone streamer had a full length of 30 m. The recorder was operated with an EPC model 3200 using a 1/4 sec scale, the signal was filtered with the low cut filter set at 300 Hz and the high cut filter set at 1000 Hz;

- the Sub-Bottom Profiler, operating with a frequency of 3.5 kHz, was fired every 62.5 milliseconds and was mounted on the port side. The recorder was operated with an EPC model 3200 using a 1/16 sec scale.

The positions of the various equipments are shown in Fig.6.

- The digital seismic survey was carried out with a power source of 21.000 joule. The multitip was towed, approximately 3 metres below the surface, 35 m astern the vessel from starboard.

The streamer, mounted on the power winch, was

towed from the midship of the stern.

The layback from the antenna to the centre of the first trace was 160 m and the layback to the N.C.D.P. position was 114.12 m.

The towing configuration is shown in Appendix 5 of this report.

The navigation system (see cf.2.1.1) provides the control for shot points at the required 12.5 metre interval.

Each closure activates a " multifix box ", whose outgoing signal is simultaneously sent (besides the D.F.S. V control unit) to the " fix marker " of the echosounder and of an E.P.C. graphic recorder.

Record length and sample rate are set to two seconds and one millisecond respectively, as required by the specifications.

At the start of each line the surveyor takes a fix and starts the shot firing sequence in order to mantain 10 shots per 125 metres. The observer logs the line, tape and file number, streamer depth, water depth as well as any misfires, parity errors and any other anomalous events.

The final fix at the end of each line was made 500 metres beyond the margin of the survey area in order to

ensure full fold coverage of the required line length.

At the end of each line the fire command to the Sparkarry was disabled and a noise strip recorded on tape before shutting down the tape transports and before starting to turn the vessel towards the run-in for the next line.

As each line was completed its details were logged in the Production Log and the tapes were labelled and boxed for despatch. On completation of the required programme the magnetic tapes of data, navigation map, digital logs, etc. were freighted to Western Ricerche Geofisiche for post-processing.

3.0 DATA REDUCTION AND RESULTS

3.1 Geological Framework

The following informations are given as a general background to the sedimentary evolution of the Sicily Channel in the late Plio-Quaternary age.

The Sicily Channel is the submerged surface of the large topographic high, which separates the Ionian Sea in the Eastern Mediterranean from the Tyrrenian and Algero-Balearic seas in the Western Mediterranean. This morphologically complex platform lying between Sicily and Tunisia is long, broad, and trapezoid shaped. The Channel comprises shallow banks, ridges, volcanoes, gentle depressions and deep basins, and its relief and

morphologic configuration are considerably more irregular than those of most shelves and continental borderlands.

Most workers envision this shallow area is a prolongation of the Tunisian-Southern Sicilian land mass and as a link between the North-African Atlas chain and the Sicilian -Italian Apennine chain.

This zone consists of thick continental crust comprising a generally thin Pliocene-Quaternary unconsolitated section above a thick sequence of Triassic to Miocene rock units (Finetti and Morelli, 1972).

There is ample evidence of geologically recent (post Miocene) structural displacement, and the different morphological-tectonic sectors of the Channel can be related to major fault patterns. Magnetic and gravity studies reveal that the main structural trends are oriented West Northwest-East Southeast i.e., parallel to the major orientation of the Sicily Channel (Allan and Morelli, 1971, Colantoni and Zarudzki,1973).

A Northeast-Southwest trend predominates at the Westernmost sector of the Channel. The largely vertical structural displacement gives rise to a complex configuration of horst (shallow tabular-shaped banks) and grabens (narrow deep linear basins).

The platform environment, where Nilde W 1 is

located, is characterized by thick sequences of deposits which pinch out locally on topographic highs and less frequently on the platform proper.

Thinning of strata is the results of simultaneous deposition and vertical fault offset, which may also result in the development of an offlap sequence or truncation.

The thickness of the Pliocene-Quaternary sediments is highly variable. An average of 360 m is generally present troughout the area. If a velocity of about 1800 meters per second is assigned to this unconsolidated Pliocene-Quaternary sequences (Finetti and Morelli, 1972), we estimate a sediment thickness whivh ranges from 0 to about 650 m.

3.2 Navigation

The recorded navigation data was used to produce a track plot at a scale of 1/10.000 for the analogue survey, and a track plot at scale 1:10.000 for the digital sismic survey .

These survey track charts are presented as enclosures 1 and 2 of this report.

Sol and Eol fixes and all fix points along each survey line with their progressive number annotated are shown in these charts. All plotted fixes correspond to the antenna position of the radiolocation system.

3.3 Bathymetry

The echosounder records are of good quality and no problems were encountered with the equipment during the survey. An example of echosounder analogue record is shown in Fig.7.

A correction for the depth of the transducer's plates below sea level was applied to the echosounder, so that true water depths were scaled directly off the echograms and a correct automatic acquisition was so obtained, in metres, at every fix point.

The digitized depth data were monitored and checked against the echosounder analogue records to confirm the veracity of any salient seafloor features.

The water depths were then reduced to remove the effects of tidal variations and atmospheric pressure. The atmospheric pressure during this survey was a value of 1035 millibars.

The Datum selected is that defined L.S.L (Lowest Sea Level) in accordance with the Agip specifications.

This Datum, defined by the "Istituto Idrografico della Marina", is related to a constant conventional level, called " Level of reduction of sounding " corresponding to the Mean Low Water Spring (MLWS).

The tidal data considered are those based upon the prediction of the 1985 Tide Table for the secondary ports of Mazara del Vallo and Marsala.

A simplified bathymetric chart with isobaths at 1.0 m is then shown in enclosure 3.

The minimum recorded water depth is 100.5 m, approx. at the NW corner of the survey area, while the maximum (120.3 m) was measured at the Northwest corner of the area. The water depth at the proposed well location is : NILDE W 1 107.8 meters.
The seafloor appears flat with small variations in depth (one or two metres about), but without any preferencial dip.

3.4 Seafloor Features

The side scan sonar records show a very regular, flat seafloor, probably constituted of thin sandy sediments, with the sporadic emergence of more coarse materials sometimes visible on the sonograph. No targets or "scars" were detected in the area and an example of S.S.S. data record is shown in Fig.7.

3.5 Analogue Seismic Profiling

The S.B.P. 3.5 kHz and Uniboom records show a regular succession of parallel or sub-parallel strata of thin and/or medium sandy compact sediments.

The strong reflection caused by the more superficial compact layers didn't allow a best penetration of the signal, nevertheless, in some

below the main parallel reflectors, a pinch out unconformity giving evidence of the various transgressions to which the region was subjected.

Cause of the regularity of the parallel reflectors and of the not well defined erosional surface, it is considered not significative to produce an "Isopach map".

3.8 Seabed Lithology

Five bottom samples were collected by means of a Shipek grab sampler at the programmed positions; the description of each sample with the relative coordinates is reported below :

S1
E : 2247878.16 N : 4165441.68
description : silty-medium sand sediments with remarcable (about 80%) organic bioclastic fraction.

S2
E : 2247928.80 N : 4165979.89
description : silty medium sandy sediments with 50 % of organic bioclastic incidence

S3
E : 2248493.40 N : 4165538.05
description : thin sand with clay and about 10 % of bioclastic and organic components

S4
E : 2247884.77 N : 4164967.04
description : organic materials (biozoans, calcareous seaweeds, etc.) with medium sand and clay

S5
E : 2247397.09 N : 4165470.04
description : silty-sandy clay with about 5% of bioclastics

3.7 Conclusions

The water depth over the area ranges from 100.5 metrs to 120.3 metres with a value at the proposed well location of :

NILDE W 1 = 107.8 metres

The seafloor is almost flat and regular, with a sub-parallel layering of fine or medium-fine sandy sediments and with a little (sometimes absent) silty fraction. Side scan sonar records show sporadic emergence of coarser materials and no targets or scars seems to be on the area.

The analogue sismic records show the presence of some strong parallel reflectors and only in few events it was possible to reach the lower layers which present a clear angular unconformity (a probable erosional surface).

No gas accumulations seems to be diffused in sediments notwithstanding the considerable organic fraction present.

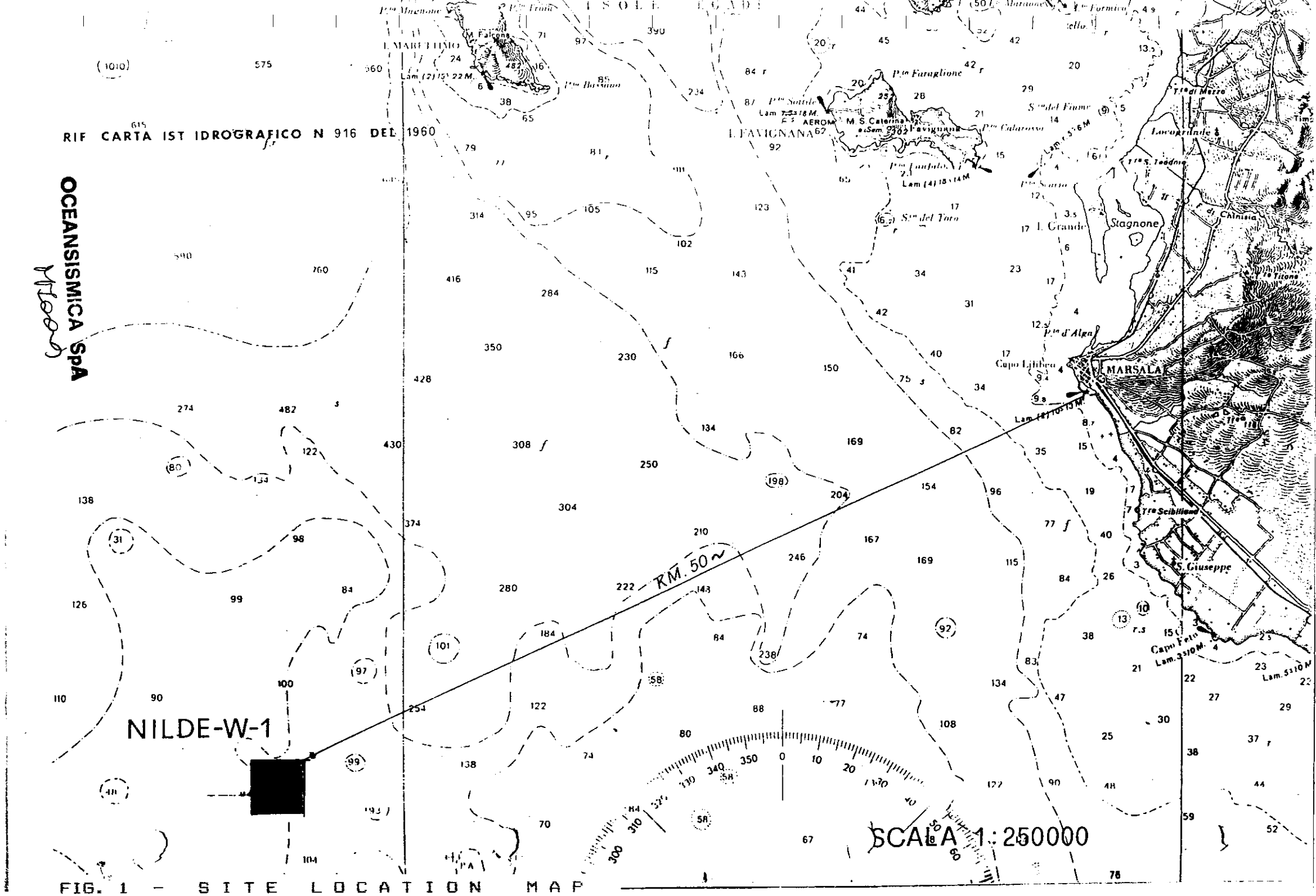


FIG. 1 - SITE LOCATION MAP

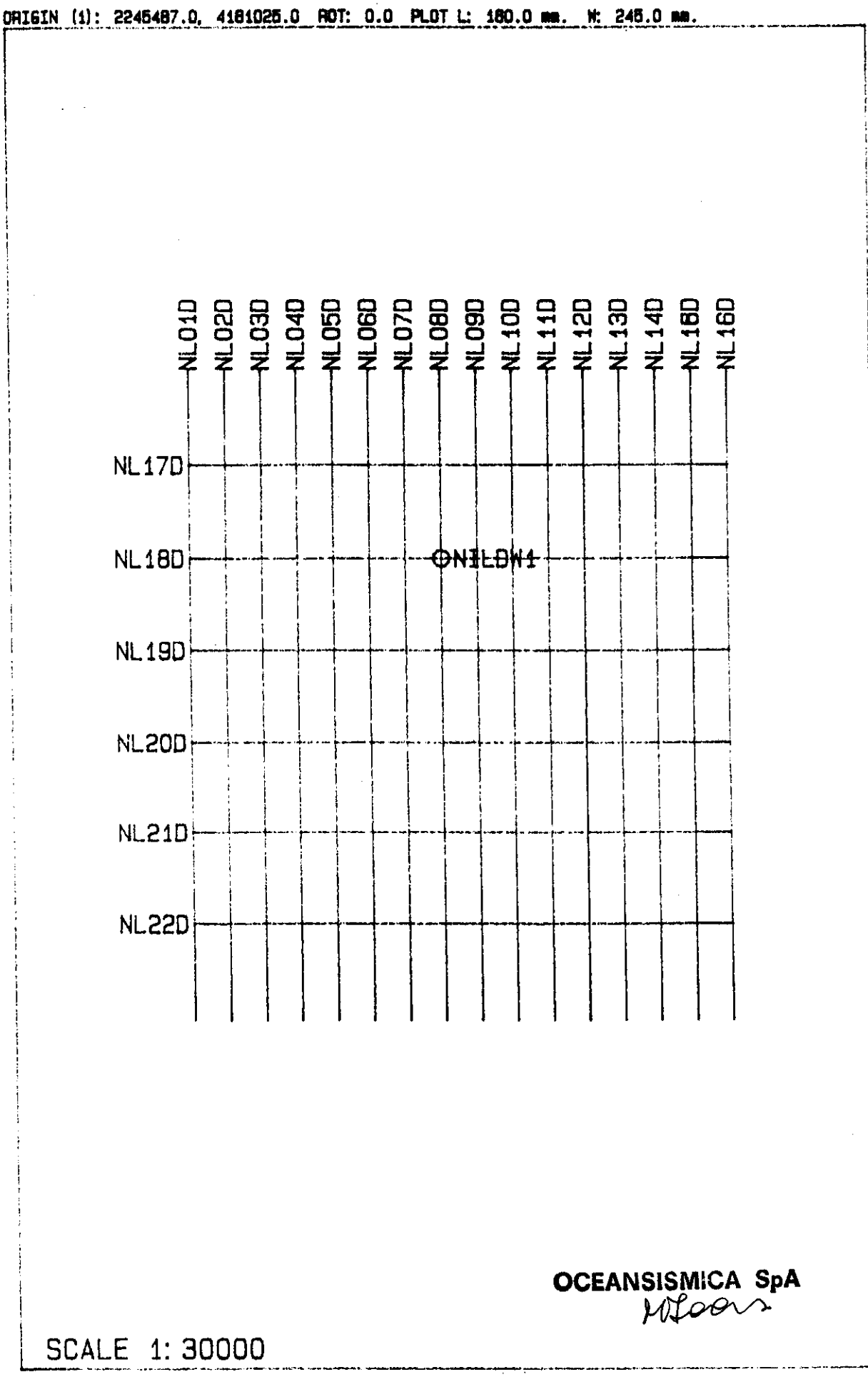


FIG. 3 - SHIP'S TRACKS FOR DIGITAL SURVEY

NILDE W1-ANALOGUE LINES (3X3.5 Km)

ORIGIN (1): 2245787.0, 4162028.0 ROT: 0.0 PLOT L: 140.0 mm. W: 230.0 mm.

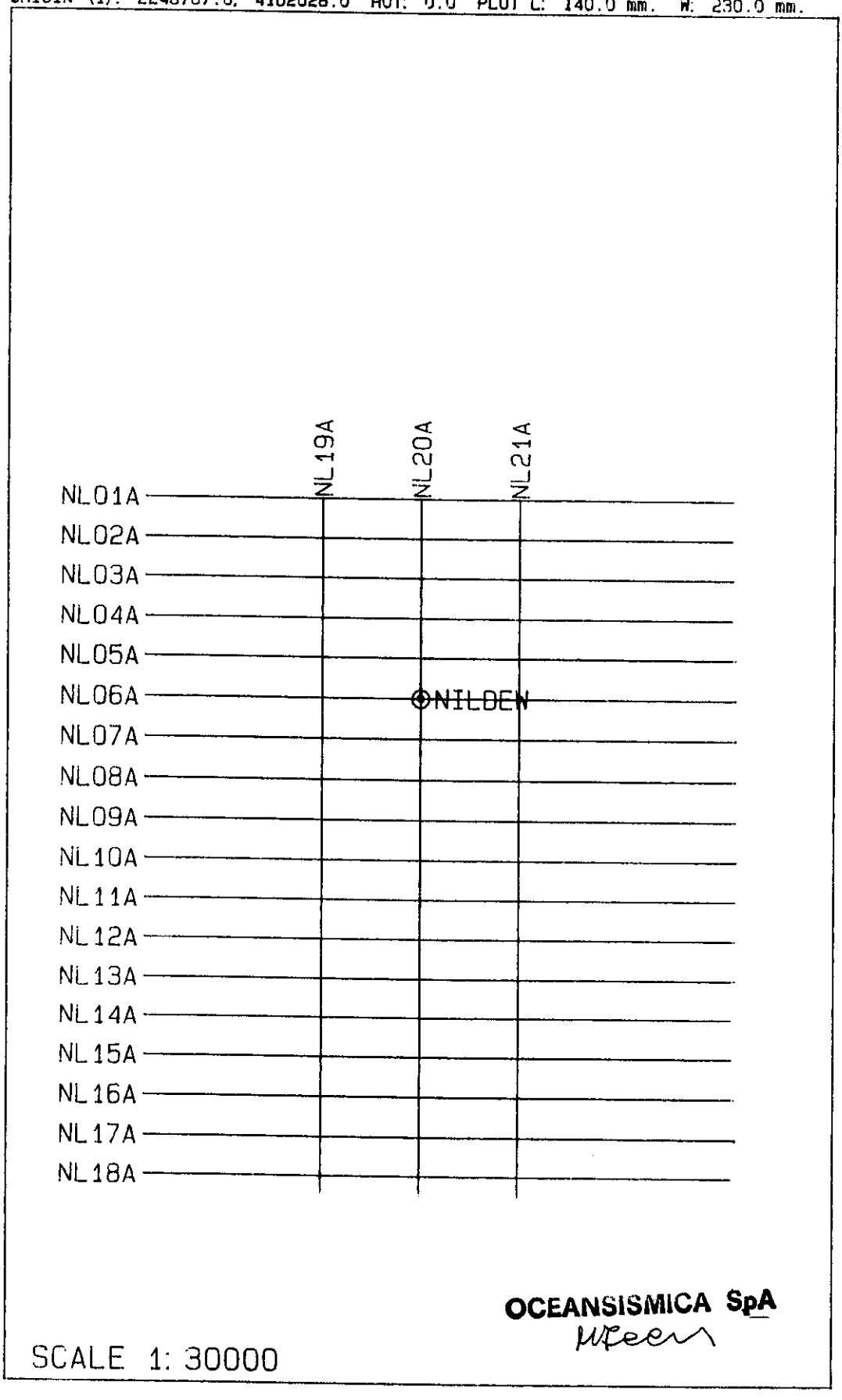
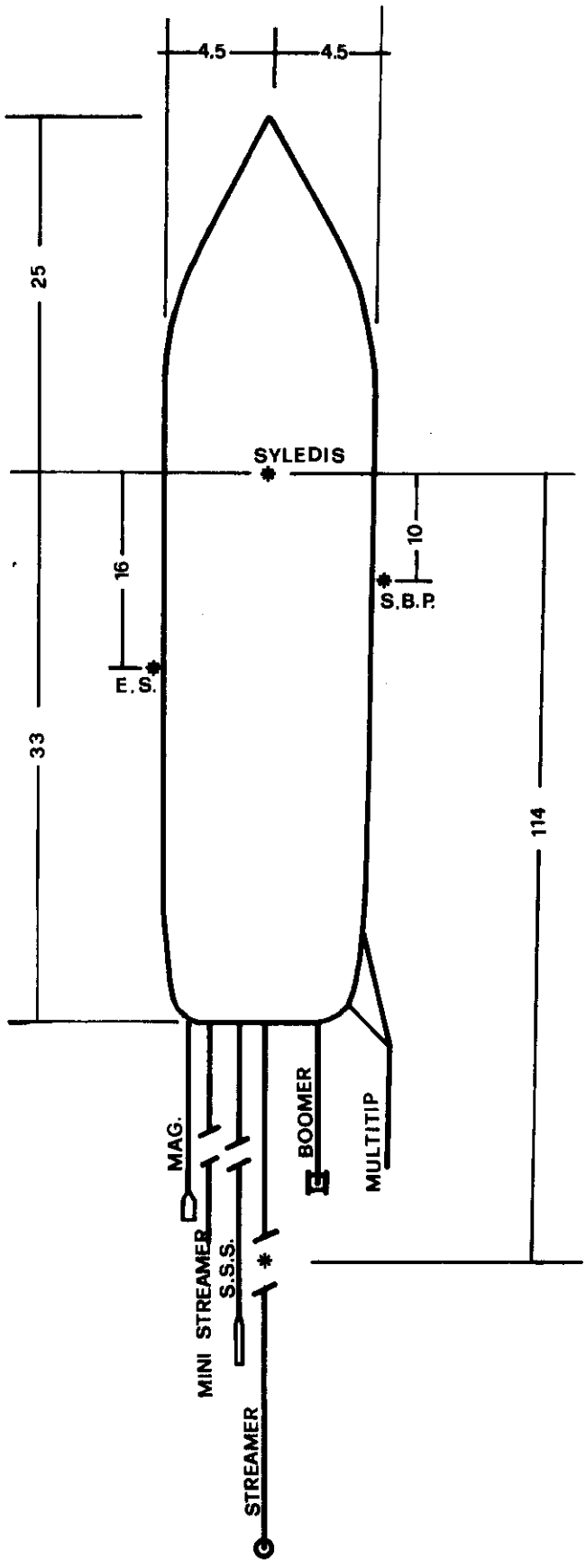


FIG. 2 – SHIP'S TRACKS FOR ANALOGUE SURVEY



OCEANSISMICA SpA

FIG. 4 - LAYBACK DIAGRAM OF ANALOGUE SEISMIC SURVEY

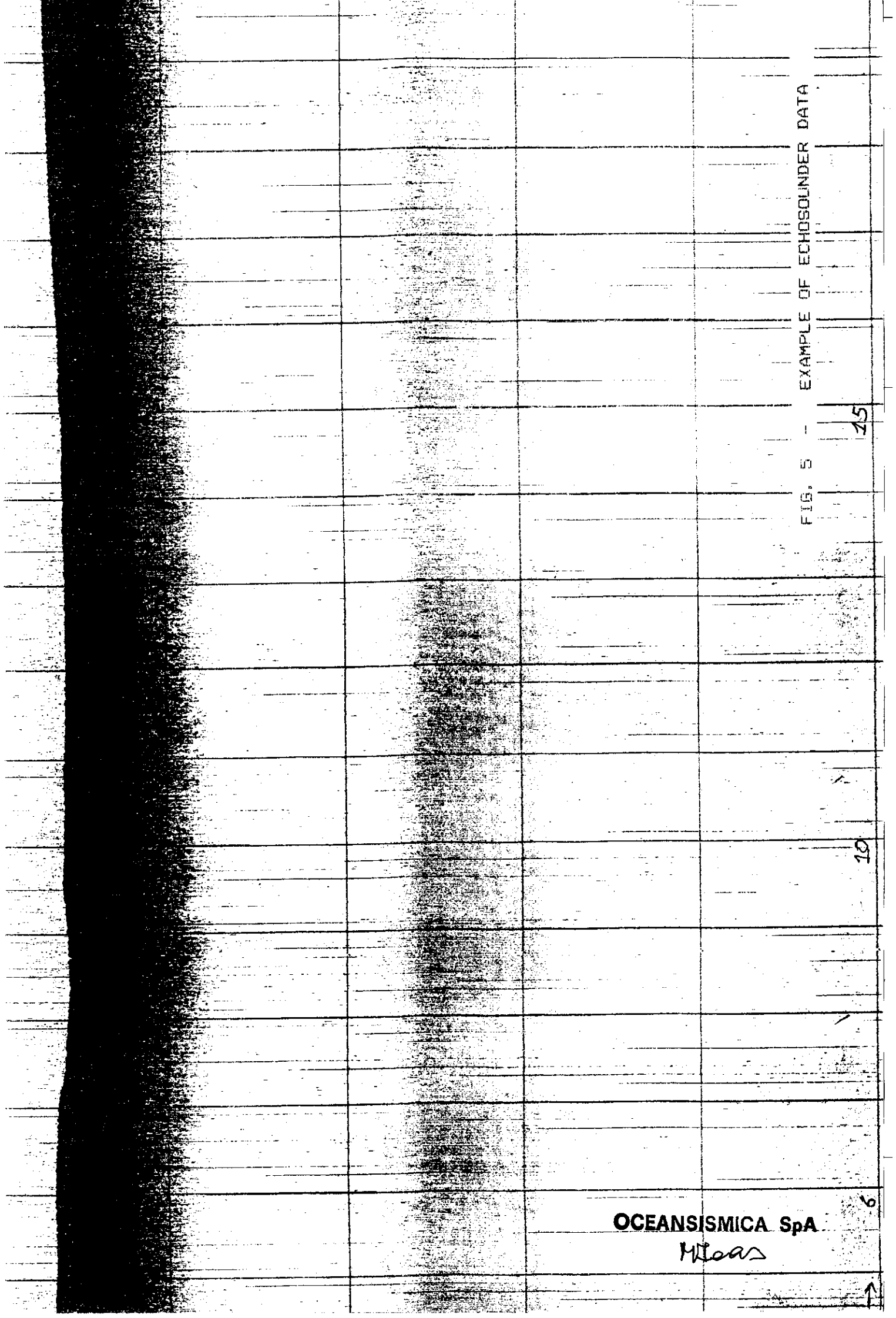


FIG. 5 - EXAMPLE OF ECHOSOUNDER DATA

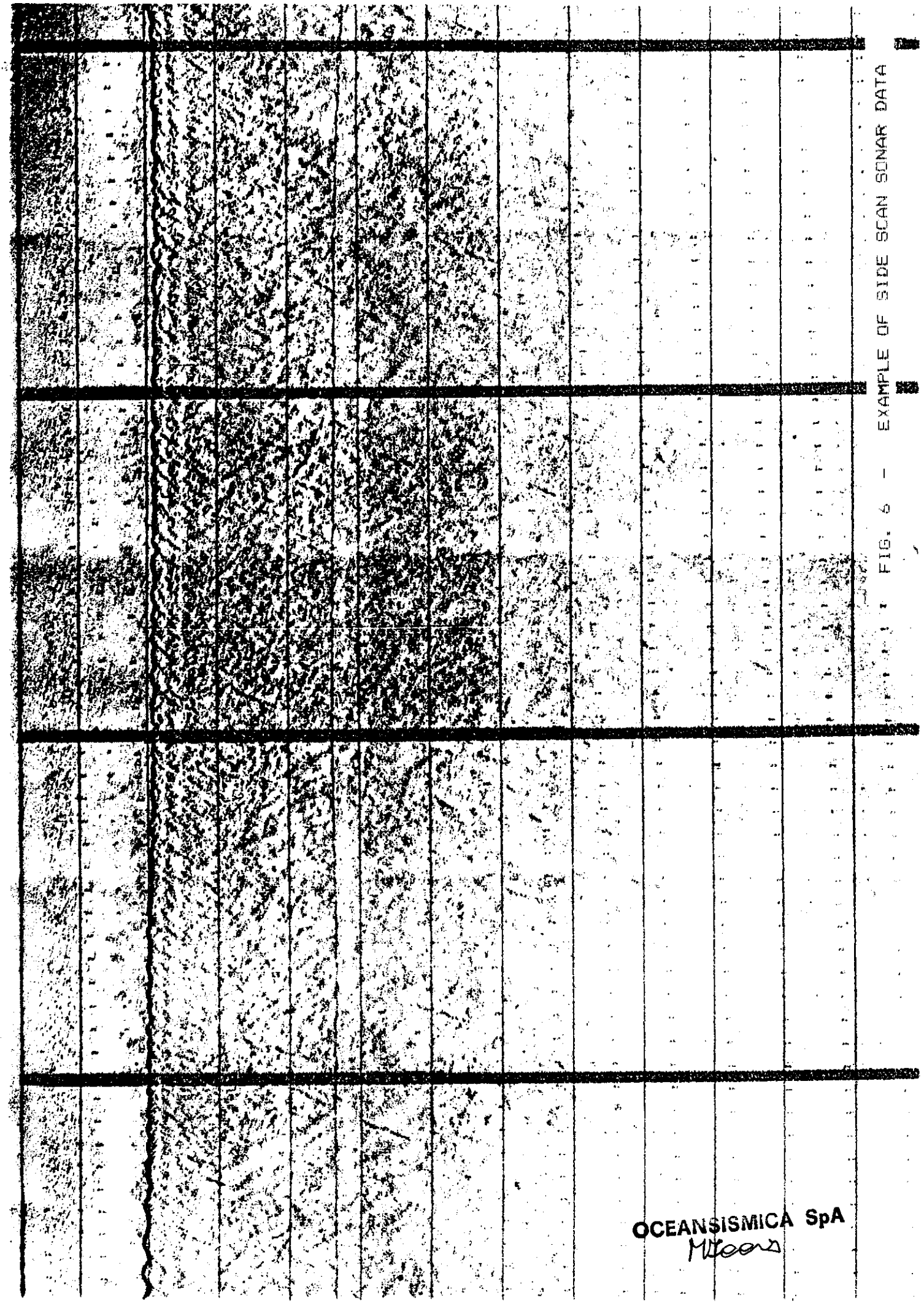


FIG. 6 - EXAMPLE OF SIDE SCAN SONAR DATA

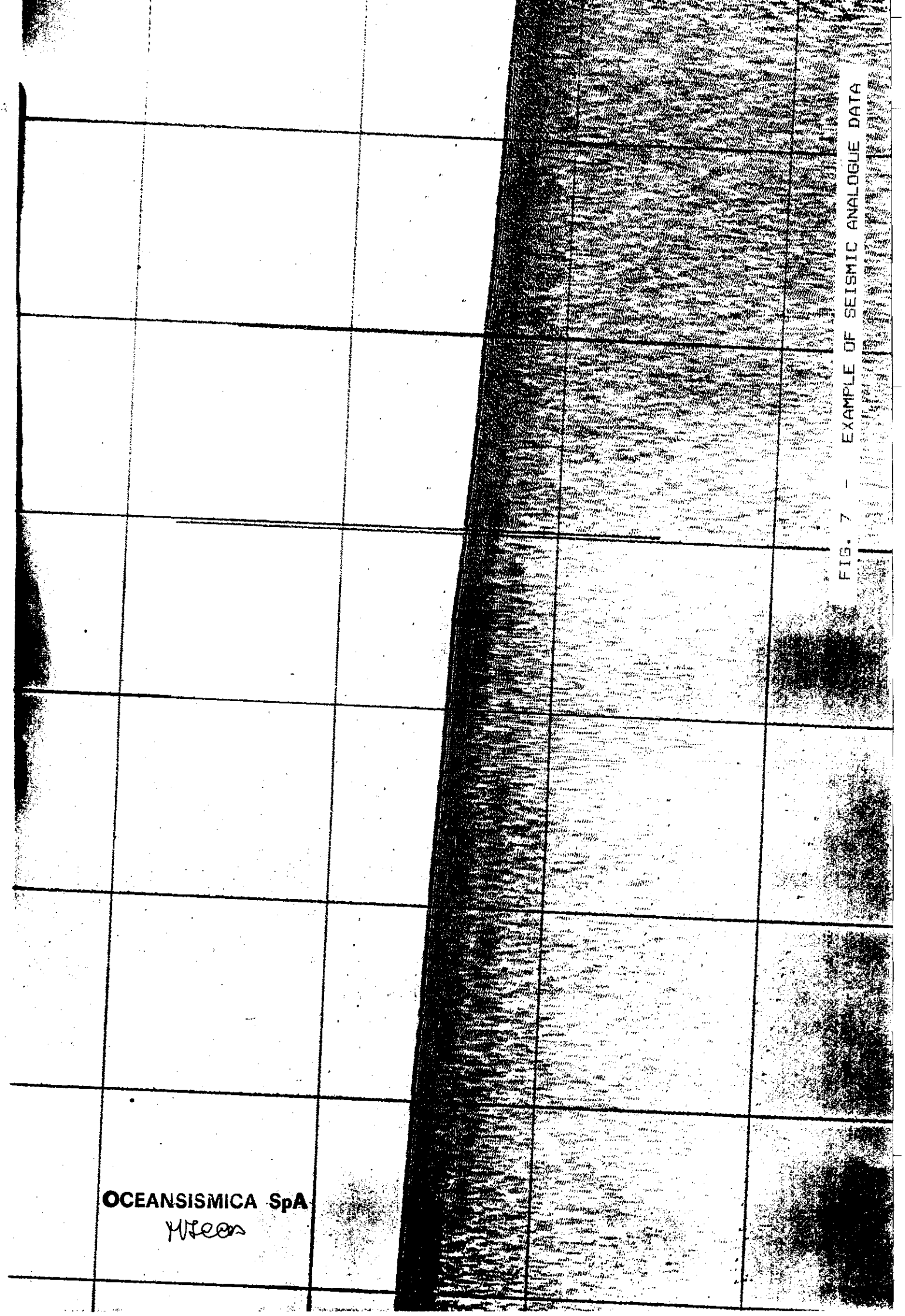


FIG. 7 - EXAMPLE OF SEISMIC ANALOGUE DATA

A P P E N D I X n 1

SHORE STATION DESCRIPTION

Agip S.p.A.

Comune ERICE Località ERICE

Monografia del punto ERICE AGIP

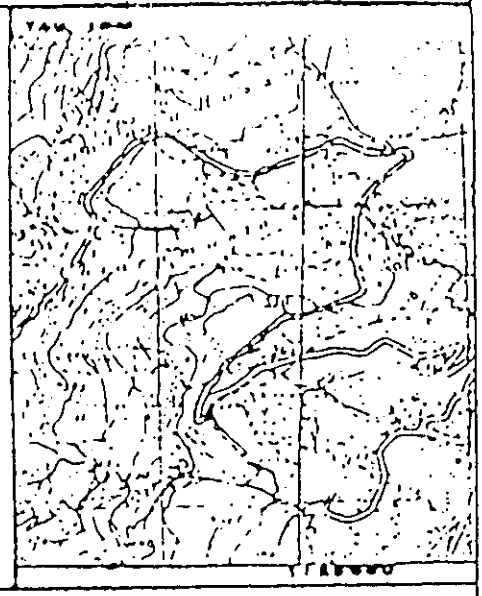
DESCRIZIONE DEL PUNTO

Per recarsi sul punto prendere la strada che da Trapani coduce ad Erice.

Al Km. 10 prendere, sulla destra, la stradina non asfaltata ; proseguire per ca. m. 70 sino a trovare un muretto alto ca. cm. 30.

Il punto si trova nello spigolo Nord-Est del muretto ed è segnalizzato da un bollo di vernice rossa.

F. 100.000 n. 248



Coordinate Gauss-Boaga (R.U) : EST = 2.307.089,50 NORD = 4.213.107,34

Coordinate Geografiche : LONG. = 12° 34' 26",19 LAT. = 38° 02' 24",19

Quota s.l.m. = mt. 550 F° 248

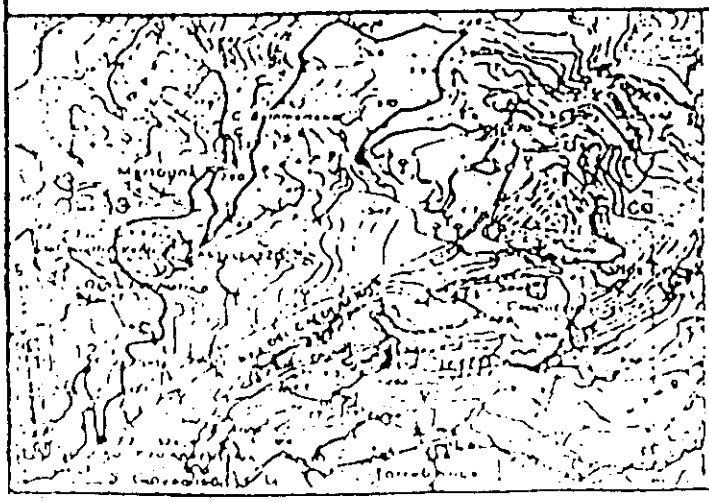
ACCESSO

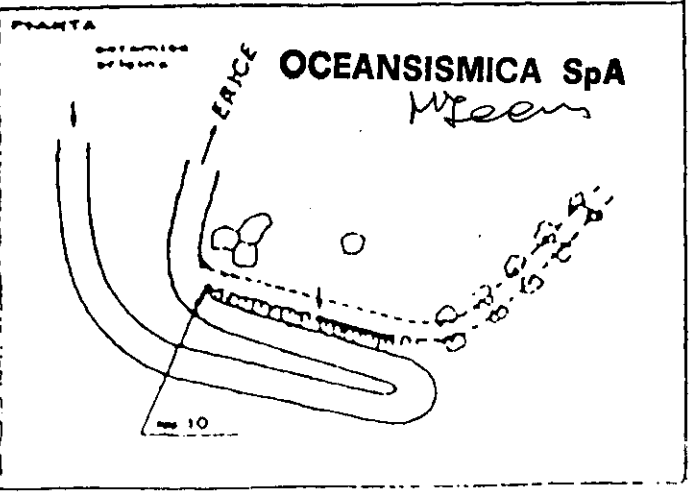
Per arrivare al punto prendere la strada che da Trapani conduce ad Erice; giunti al Km. 10 prendere la stradina a destra che conduce ad una fattoria.

Il punto trovasi a ca. 50 m. dalla strada principale ed è materializzato dallo spigolo interno, miniato in rosso, di un parapetto in muratura.

DETERMINAZIONE TOPOGRAFICA DEL PUNTO

Il punto è stato determinato per Azimuth e distanza da Torre Titone (n. 257105) mediandone i dati con numerosi pothenot ricavati dai trigonometrici della zona di Trapani e Marsala.





G.S.O. s.r.l.

Nome: MARETTIMO CAVA VECCHIA

F/N: 256.516

PROVINCIA: Trapani

DETERMINAZIONE: G.S.O. 1983

Descrizione:

Dal paese di Marettimo prendere la strada sterrata che porta alla località "Cisternola" da qui raggiungere la zona "Cava Vecchia".

Il punto é materializzato con un paletto in ferro infisso nel suolo sulla sommità di una piccola altura ad est della cava.

Coordinate GAUSS-BOAGA

Fuso	E	N
E	2.262.732,225	4.204.638,324
W		

Coordinate GEOGRAFICHE

Long	Lat
12°04'19",536	37°57'08",326

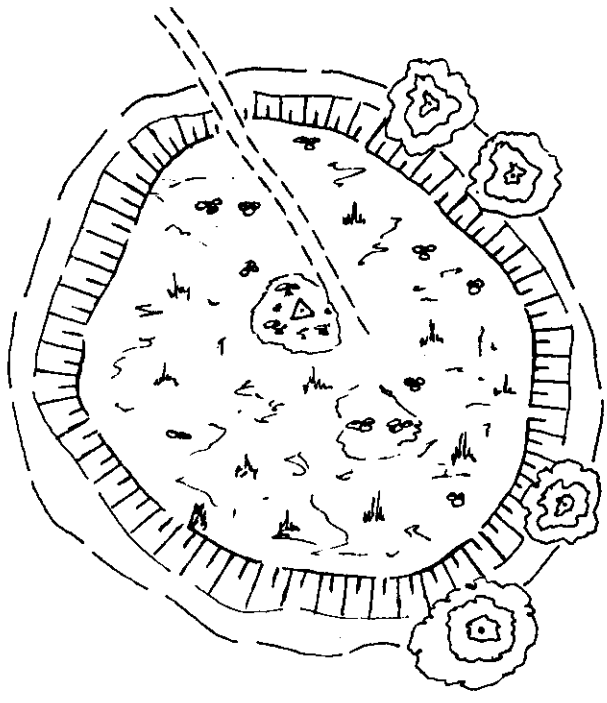
Coordinate U.T.M.

Quote al P.P. = 258,00

P.P. = Suolo

Foglio I.G.M. 1:100'000 n° = 256

Pianta e prospetto



OCEANSISMICA SpA

G.S.O. s.r.l.

Nome PARTANNA

F/N 257.507

PROVINCIA =

DETERMINAZIONE: G.S.O.

Descrizione:

Il punto é situato in prossimità della località Madonna della Libera sul primo tornante da Partanna.

E' Materializzato da un picchetto su basamento in cemento armato.

Coordinate GAUSS-BOAGA

Fuso	E	N
E	2.334.463,37	4.179.427,49
W	1.843.183,28	4.184.485,27

Coordinate GEOGRAFICHE

Long	Lat
12°53'39",523	37°44'33",930

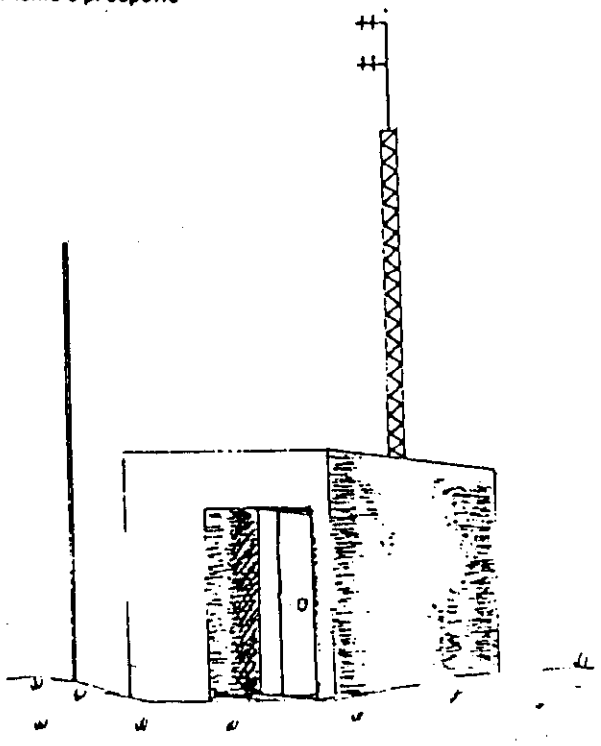
Coordinate U.T.M.

Quote al P.P. = 510,00

P.P.= Suolo

Foglio I.G.M. 1:100'000 n° = 257

Pianta e prospetto



OCEANSISMICA SpA

A P P E N D I X n 2

DETAILED LISTING OF PROFILE

OCEANSISMICA S.p.A.
ROME - ITALY

Date: 02 - 12 - 85

NILDE W 1
DIGITALE

Client: AGIP

Location: SICILY CHANNEL

PROFILE: NL01D HDG: 180°
First FIX: 1 Time: 01 59
Last FIX: 325 Time: 02 34
Fixes Run: _____ Lenght: 3500 M

D.Recorded: ES SBP B SPK SSS MAG

Comments : ok

PROFILE: NL03D HDG: 180°
First FIX: 1 Time: 7 26
Last FIX: 330 Time: 8.05
Fixes Run: _____ Lenght: 3500

D.Recorded: ES SBP B SPK SSS MAG

Comments :

PROFILE: NL01D HDG: 0°
First FIX: 1 Time: 2 57
Last FIX: 327 Time: 3 24
Fixes Run: _____ Lenght: 3 500m

D.Recorded: ES SBP B SPK SSS MAG

Comments : ok

PROFILE: NL04 HDG: 0°
First FIX: 1 Time: 8.32
Last FIX: 346 Time: 9.00
Fixes Run: _____ Lenght: 3500

D.Recorded: ES SBP B SPK SSS MAG

Comments : ok

PROFILE: NL05D HDG: 180
First FIX: 1 Time: 3 52
Last FIX: 330 Time: 4 35
Fixes Run: _____ Lenght: 3 500

D.Recorded: ES SBP B SPK SSS MAG

Comments : OK

PROFILE: NL 12 D HDG: 180°
First FIX: 1 Time: 9.44
Last FIX: 180 Time: 10.23
Fixes Run: _____ Lenght: [illegible]

D.Recorded: ES SBP B SPK SSS MAG

Comments : LINEA INTERROTTA A [illegible] DIVIS
CAUSA SPARKER

PROFILE: NL10D HDG: 0°
First FIX: 1 Time: 5 10
Last FIX: 320 Time: 5 39
Fixes Run: _____ Lenght: 3500

D.Recorded: ES SBP B SPK SSS MAG

Comments : ok

PROFILE: NL08D HDG: 0°
First FIX: 1 Time: 10.52
Last FIX: 330 Time: 11.19
Fixes Run: _____ Lenght: 3500

D.Recorded: ES SBP B SPK SSS MAG

Comments : [illegible]

OCEANSISMICA SpA

OCEANSISMICA S.p.A.
ROME · ITALY

(2)

Date: 02-12-85

NILDE W 1
DIGITALE

Client: AGIP

Location: SICILY CHANNEL

PROFILE: NL14D HDG: 180°
First FIX: 1 Time: 18.03
Last FIX: 322 Time: 12.42
Fixes Run: _____ Lenght: _____

D.Recorded: ES SBP B SPK SSS MAG

Comments : OK

PROFILE: NL07D HDG: 180°
First FIX: 1 Time: 22.47
Last FIX: 330 Time: 23.14
Fixes Run: _____ Lenght: 3500

D.Recorded: ES SBP B SPK SSS MAG

Comments : OK

PROFILE: NL11D HDG: 0°
First FIX: 1 Time: 13.00
Last FIX: Abt. Time: _____
Fixes Run: _____ Lenght: _____

D.Recorded: ES SBP B SPK SSS MAG

Comments : Cutcorde Cause Shut.off

PROFILE: NL03D HDG: 8°
First FIX: 1 Time: 23:45
Last FIX: 320 Time: 00.20
Fixes Run: _____ Lenght: _____

D.Recorded: ES SBP B SPK SSS MAG

Comments : OK

PROFILE: NL11D HDG: 0°
First FIX: 1 Time: 13.55
Last FIX: 330 Time: 14.30
Fixes Run: _____ Lenght: 3500

D.Recorded: ES SBP B SPK SSS MAG

Comments : OK

PROFILE: NL06D HDG: 180
First FIX: 1 Time: 00.45
Last FIX: 319 Time: _____
Fixes Run: _____ Lenght: _____

D.Recorded: ES SBP B SPK SSS MAG

Comments : _____

PROFILE: NL15D HDG: 180°
First FIX: 1 Time: 11.53
Last FIX: 330 Time: 15.28
Fixes Run: _____ Lenght: _____

D.Recorded: ES SBP B SPK SSS MAG

Comments : OK

PROFILE: NL02D HDG: 0°
First FIX: 1 Time: 1:43
Last FIX: 330 Time: 2:17
Fixes Run: _____ Lenght: _____

D.Recorded: ES SBP B SPK SSS MAG

Comments : _____

OCEANSISMICA SpA

OCEANSISMICA S.p.A.
ROME - ITALY

Date: 3/12/85

NILDE W1
DIGITALE

Client: Agip
Location: Canale di Sicilia

PROFILE: NL 12 D HDG: 180°
First FIX: 1 Time: 2:52
Last FIX: 320 Time: 3:25
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

PROFILE: NL 20 D HDG: 90°
First FIX: 1 Time: 7:10
Last FIX: 280 Time: 7:41
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

PROFILE: NL 08 D HDG: 0°
First FIX: 1 Time: 3:49
Last FIX: 330 Time: 4:23
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

PROFILE: NL 21 D HDG: 270°
First FIX: 1 Time: 8:06
Last FIX: 290 Time: 8:36
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

PROFILE: NL 16 D HDG: 180
First FIX: 1 Time: 4:53
Last FIX: 320 Time: 5:26
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

PROFILE: NL 18 D HDG: 90°
First FIX: 1 Time: 9:07
Last FIX: _____ Time: _____
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : Annullata causa Sparker

PROFILE: NL 22 D HDG: 270°
First FIX: 1 Time: 6:13
Last FIX: 290 Time: 6:41
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

PROFILE: NL 18 D HDG: 270°
First FIX: 1 Time: 10:43
Last FIX: 290 Time: 11:18
Fixes Run: _____ Lenght: _____
D.Recorded: ES SBP B SPK SSS MAG
Comments : _____

OCEANSISMICA SpA
M Boas

OCEANSISMICA S.p.A.
ROME - ITALY

(4)

Date: 3/12/85

WILDE W1
DIGITALE

Client: Agip
Location: Canale di Sicilia

PROFILE: NL17D HDG: 90°
First FIX: 1 Time: 11:36
Last FIX: 280 Time: 12:02
Fixes Run: / Lenght: 3000
D.Recorded: ES SBP B SPK SSS MAG
Comments : OK

PROFILE: NL19D HDG: 270°
First FIX: 1 Time: 15.22
Last FIX: 280 Time: 15.50
Fixes Run: / Lenght: 3000
D.Recorded: ES SBP B SPK SSS MAG
Comments : OK

PROFILE: NL19D HDG: 270°
First FIX: 1 Time:
Last FIX: 30 Time: 12 32
Fixes Run: / Lenght: 300
D.Recorded: ES SBP B SPK SSS MAG
Comments : Abziehen der Tiefen

PROFILE: NL09D HDG: 180°
First FIX: 1 Time: 16,29
Last FIX: 330 Time: 16,58
Fixes Run: / Lenght: 3500
D.Recorded: ES SBP B SPK SSS MAG
Comments : OK

PROFILE: NL19D HDG: 270°
First FIX: 1 Time: 13.46
Last FIX: 40 Time: 13,51
Fixes Run: / Lenght: 3000
D.Recorded: ES SBP B SPK SSS MAG
Comments : Abzied der Tiefen.

PROFILE: HDG:
First FIX: Time:
Last FIX: Time:
Fixes Run: Lenght:
D.Recorded: ES SBP B SPK SSS MAG
Comments :

PROFILE: NL19D HDG: 270°
First FIX: 1 Time: 14,26
Last FIX: 40 Time: 14,31
Fixes Run: / Lenght: 3000
D.Recorded: ES SBP B SPK SSS MAG
Comments : Abzied der Tiefen.

PROFILE: HDG:
First FIX: Time:
Last FIX: Time:
Fixes Run: Lenght:
D.Recorded: ES SBP B SPK SSS MAG
Comments :

OCEANSISMICA SpA
MIOARO

OCEANSISMICA S.p.A.
ROME - ITALY

Date: 4/12/85

Analogico

Client: Agip

Location: Nilde W 1

: Canale di Sicilia

PROFILE: NL 19 A HDG: 180°
First FIX: 1 Time: 1:46
Last FIX: 31 Time: 2:15
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 1

PROFILE: NL 18 A HDG: 90°
First FIX: 1 Time: 5:33
Last FIX: 31 Time: 6:02
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 2

PROFILE: NL 21 A HDG: 0°
First FIX: 1 Time: 2:40
Last FIX: 35 Time: 3:13
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 1

PROFILE: NL 15 A HDG: 270
First FIX: 1 Time: 6:17
Last FIX: 21 Time: 6:37
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 2

PROFILE: NL 20 A HDG: 180
First FIX: 1 Time: 3:38
Last FIX: 31 Time: 4:07
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 1

PROFILE: NL 08 A HDG: 90°
First FIX: 1 Time: 22.14
Last FIX: 28 Time: 22.40
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 3 OK

PROFILE: NL 14 A HDG: 270°
First FIX: 1 Time: 4:40
Last FIX: 26 Time: 5:12
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 1

PROFILE: NL 09 A HDG: 90°
First FIX: 1 Time: 00:40
Last FIX: 30 Time: 1:08
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : Disco 3

OCEANSISMICA SpA

OCEANSISMICA S.p.A.
ROME - ITALY

Date: 03-12-85

AREA
NILDE W 1
AMALOGICO

Client: AGIP
Location: Canale di Sicilia

PROFILE: VL09A HDG: 270
First FIX: 1 Time: 1:45
Last FIX: 29 Time: 2:12
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 3

PROFILE: VL3A HDG: 270
First FIX: 1 Time: 5:48
Last FIX: 29 Time: 6:13
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 4

PROFILE: VL07A HDG: 90°
First FIX: 1 Time: 2:46
Last FIX: 28 Time: 3:12
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 3

PROFILE: VL11A HDG: 90°
First FIX: 1 Time: 6:49
Last FIX: 25 Time: 7:17
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 4

PROFILE: VL01A HDG: 270°
First FIX: 1 Time: 3:46
Last FIX: 28 Time: 4:12
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 4

PROFILE: VL04A HDG: 270°
First FIX: 1 Time: 7:40
Last FIX: 29 Time: 8:07
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 5

PROFILE: VL10A HDG: 90°
First FIX: 1 Time: 4:52
Last FIX: 29 Time: 5:19
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 4

PROFILE: VL12A HDG: 90°
First FIX: 1 Time: 8:30
Last FIX: 23 Time: 8:53
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 5

OCEANSISMICA SpA
M Moses

OCEANSISMICA S.p.A.
ROME - ITALY

Date: 5/12/85

ANALOGICO

Client: Agip. SpA.

Location: Nilde W 1
: Canale di Sicilia

PROFILE: NL06A HDG: 270°
First FIX: 1 Time: 9:15
Last FIX: 30 Time: 9:43
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 5

PROFILE: NL17A HDG: 90°
First FIX: 1 Time: 10:15
Last FIX: 25 Time: 10:38
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 5

PROFILE: NL13A HDG: 270
First FIX: 1 Time: 10:57
Last FIX: 32 Time: 11:27
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 6

PROFILE: NL16A HDG: 90°
First FIX: 1 Time: 11.49
Last FIX: 24 Time: 12.11
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 6

PROFILE: NL05A HDG: 270°
First FIX: 1 Time: 12.44
Last FIX: 30 Time: 13.12
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments : disco 6

PROFILE: HDG:
First FIX: Time:
Last FIX: Time:
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments :

PROFILE: HDG:
First FIX: Time:
Last FIX: Time:
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

Comments :

PROFILE: HDG:
First FIX: Time:
Last FIX: Time:
Fixes Run: Lenght:

D.Recorded: ES SBP B SPK SSS MAG

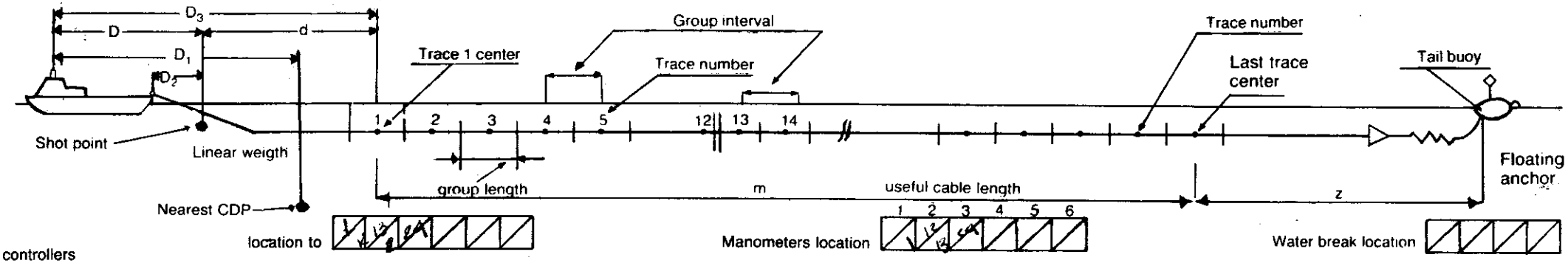
Comments :

OCEANSISMICA SpA

APPENDIX N. 3

OCEANSISMICA S.p.A.

PARTY OCEANSISMICA	**SEISMIC RECORDING REPORT**		DATE 2/12/85
SHIP MINERVA	CLIENT AGIP	SURVEY MILOE	LINE /
NAVIG. SYSTEM: SYLEDYS			



Primary system antenna D = 68 m	First trace center to SP with stretching: d = 92 m	Antenna to CDP: D_1 = 114 m	Ship's stern to Shot point D_2 = 35 m	Antenna to Trace 1 center: D_3 = 160 m
Tail Section Z = 80 m	Hydrofone type: Number per trace:	Lead in configuration: Ship or source		

ENERGY SOURCE

MODEL SPARKER

POWER 17 KJ Kjoules

NUMBER OF ELECTR 12 PAIR

SOURCE DEPTH 3 ÷ 4 m

POPS PER SHOT POINT 1

BUBBLE ms

PERIOD

RECORDING PARAMETERS

AMPLIFIER DFS V

TRACES 12 ~~24~~ 48 96

TRACKS 9 1600 BPI

FORMAT SEG B

SAMPLING 1 ms

RECORDING LENGTH 2 s

COVERAGE %

SHOT INTERVAL 12.5 m

ON BOARD SECTION

CAMERA MODEL EPC

RECORDING EVERY SHOT

ON TRACE 1

RECORDING FILTERS

LOW		SLOPE		ALIAS		SLOPE	
18	Hz	18	dB/oct	[illegible]	Hz	72	dB/oct

EARLY GAIN dB — PRE AMPLIFIER GAIN 18 dB

TO — S.O.D. ☐ — AUX N° ☐

AUXILIARY CHANNELS

CH N° 1	FUNCT. SIGN.	CH N° 2	FUNCT. SIGN
CH N° 3	FUNCT. W. REAR	CH N° 4	FUNCT. 100 H_z
CH		CH	

REMARKS:

OCEANSISMICA SpA

M Foers