

-WP11=2-41006 ١. n INTERIM REPORT, MATHE/SURFACE-DUCT PROPAGATION MODEL FOR C/P SONAR PREDICTIONS. by /NOVICK, R./SEEGAL ... and S./GINSBERG р*G--*023-тм-66-24 ADDESSION IN Contract No. Nobsr-93023 11 **1**3 Watte Section rit 15 Butt Section 📋 . 22 Providence 17576 Pex Hr. on file 4. APRILABILITY CODES Submitted to: War SPECIAL U. S. Navy Electronics Laboratory San Diego, California Approved; Approved: 1. Laurdann W GRAHAM Walton Graham Marvin Baldwin Department Head, TRG Project Technical Director, NEL Isidore Cook Deputy Project Technical Director, DTMB $\Box \mathbf{C}$ Submitted by: ന്നാവം TRG Incorporated MAR 7 1971 A Subsidiary of Control Data Corporation Route 110 $|\mathcal{G}_{j}|$ 501 Melville, New York 11746 D 353415 ***10**66 DISTRIBUTION STATEMENT A Approved for public release; Distribution Unlimited

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SECTION 1

INTRODUCTION

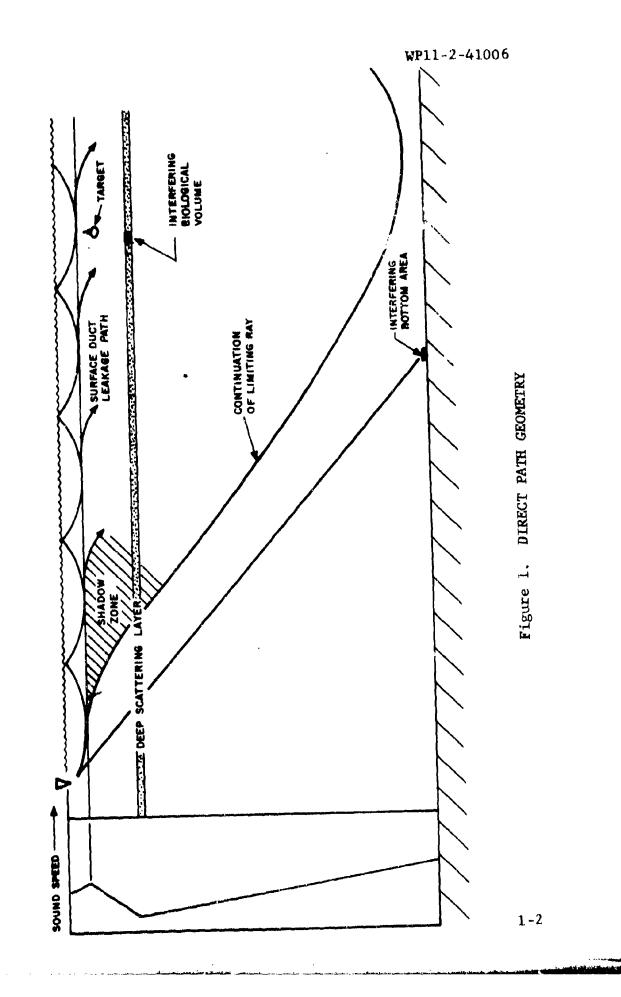
This report is an extension of TRG's previous surface ship bottom bounce sonar prediction model (Reference 1) to include the case of direct path propagation both to the potential target and reverberation sources. The tenets of valid sonar prediction are unchanged: in addition to an accurate estimate of the target echo level, one must include <u>all</u> significant reverberation components and sonar noise level to successfully forecast the sonar performance. The scattering sources for the surface duct problem are the same as for the bottom bounce mode (it's the same ocean!); their relative importance depends upon the mode of operation.

Using moderate depression angles (near 20°) in the bottombounce mode, the dominant reverberation source is, generally, the sea surface, followed in importance by the bottom, and then, by biological scatterers. On the other hand, in the surface duct mode, sea surface reverberation is usually negligible after a few seconds; this rapid decay in time results from the sea-surface grazing angle which must quickly approach zero for rays propagating in the surface duct. Since the surface back-scattering strength drops off rapidly with decreasing grazing angle, surface reverberation is, in general, not a limiting factor for surface-duct sonars.

Accordingly, the dominant reverberation sources are the bottom and the biological scatterers. At short ranges, the biological component dominates, since bottom reverberation begins at a time corresponding to target range equal to the water depth. At longer ranges, the predominant reverberation depends upon the particular circumstances. Figure 1 is a sketch of the direct path detection problem, illustrating some of the reverberation paths to be considered.

A comparison of the surface duct and bottom bounce reverberation calculations reveal the following important differences:

The phrases "direct path" and "surface duct" are used interchangeably in this report.



- 1. Surface reverberation is negligible for the surface-duct problem.
- 2. The deep-scattering layer (abbreviated DSL), lumped as a small addition to the surface reverberation in bottombounce calculations, must be considered explicitly in the surface duct calculation because of the critical relation between the propagation losses to the biological scattering layer and to the target.
- 3. Ray solutions are often invalid (or non-existent, as in the shadow zone). The propagation losses must be computed by an alternative method over paths where ray-tracing may lead to difficulties.

The bottom reverberation calculations for these two modes of sonar operation are identical. The reader is referred to the bottom-bounce report (Reference 1) for the details of the bottombounce calculations. This report will emphasize the direct-path echo and DSL reverberation calculations which differ from the corresponding work in the bottom-bounce discussion. After a discussion of the theoretical background for these calculations, illustrative calculations are performed for a conformal/planar (C/P) sonar.

A. SURFACE DUCT PROPAGATION

Thermal processes and mixing near the surface often create a layer adjacent to the surface in which the temperature and sound velocity of the water increases with depth (isothermal water will show a positive sound velocity gradient due to the effect of hydrostatic pressure,) until the thermocline, a region characterized by a negative velocity gradient. Acoustic rays with source angles less than the limiting ray angle (see Figure 1) vertex before reaching the thermocline boundary and return to the surface, where they are reflected; these processes of reflection and refraction repeat as these rays propagate. This combination of the reflective surface and the positive velocity gradient ducts the sound, producing propagation conditions quite different from those experienced in the bottom-bounce mode. Direct path propagation losses could be derived from the exact solution to the wave equation with appropriate boundary conditions. A truncated expansion of the solution in terms of the normal-mode eigenfunctions provides a good approximation to the propagation loss (Reference 2). However, this method is computationally inconvenient for system performance calculations; furthermore, the boundary conditions are difficult to express in terms applicable to a normal - mode calculation and are not accurately known.

On the other hand, refractive ray-tracing, using the constant gradient approximation, involves simple calculations, but has a restricted domain of applicability. Ray-tracing yields valid results only where conditions are slowly varying over a distance measured by a wavelength. Ray acoustics will not be a good approximation to the propagation whenever:

- The radius of curvature of the rays is near the order of one wavelength. The ray direction must change slowly over distances measured with respect to the wavelength.
- 2. The velocity of sound changes appreciably over the distance of one wavelength.
- 3. There is a large percentage change in the amplitude over the distance of a wavelength.

At short ranges, before the first vertex, normal mode theory, ray-tracing, and the empirical AMOS formulae (Reference 4) give essentially identical results. At longer ranges, however, ray-tracing may lead to spurious results. For example, ray theory predicts caustics, at which the intensity becomes infinite, which are not observed in practice, and fails to indicate caustics which are observed. The sharp shadow zone, predicted by ray acoustics, is not observed. (Understandably, since conditions at the boundary of the surface layer with the thermocline violate the conditions for validity of ray acoustics.) Thus, surface duct ray path loss computations beyond the first vertex are subject to question.

*See Reference 6, Section 3.6 "Validity of Ray Acoustics".

Accordingly, an empirical method of calculating propagation losses in the surface duct seems desirable. Since the loss equations resulting from Project AMOS are based on a large volume of experimental data, they provide a good alternative to loss calculations based on refractive ray-tracing, which have the limitations discussed above. The AMOS formulae take into account the following oceanographic factors:

- 1. Depth of the isothermal (positive gradient) layer.
- 2. Sea State.
- 3. Water temperature.
- 4. Acoustic frequency.
- 5. Target geometry.

The AMOS equations consider the propagation as broken into three zones. The first, the near zone, is bounded by the limiting ray which leaves the source, touches the bottom of the surface channel, and returns to the surface. In the near zone, the energy travels by a direct path, spreading spherically. The third zone, the far zone, is bounded by the same limiting ray after two or more surface skips. In the far zone, cylindrical spreading, thermal absorption, and a surface scattering loss describe the energy loss.

The second zone, the middle zone, is a region of transition between the near zone with spherical spreading, and the far zone with cylindrical spreading and a surface scattering loss. For a target in the layer, the AMOS equations give the propagation loss directly. A target below the layer is insonified by energy penetrating the surface duct by the following mechanisms:

- 1. Diffuse scattering from the rough sea surface.
- 2. Diffractive leakage from the surface channel. (Recall that ray-tracing assumes that there are no changes in the medium over a distance the order of the wavelength. Diffraction effects account for the failure to meet this requirement).
- 3. Diffractive leakage into the shadow zone from rays

This discussion of the AMOS equations is based on a discussion appearing in Ref. 3.

downward out of the layer.

The first two mechanisms are accounted for by a depth dependent loss factor. Diffractive leakage from the direct beam is handled separately. For a given situation, the dominant mechanism may be of any of the three mentioned above. Loss calculations are made following both routes; the one yielding the least loss is retained. Because the AMOS formulae result from an evaluation of a large amount of data, they are a reasonable alternative to refractive ray tracing for propagation loss calculations. These empirical formulae are valid to a depth of about 600 feet.

The propagation loss is given by the sum: Propagation loss = spreading loss + reflection losses + absorption loss.

When valid, ray-acoustics predicts the spreading loss. The empirical AMOS formulae account for a spreading loss, and handle reflection losses and absorption losses explicitly.

The absorption loss accounts for energy lost through dissipative mechanisms. This loss is clearly proportional to the distance traveled through the water. The constant of proportionality is given by a temperature-dependent constant times some power of the frequency. (For example, the absorption formula for leakage out of the duct varies as $f^{3/2}$; while the AMOS dissipative absorption formulae, at low frequencies, represents the loss as proportional to f^2 .)

On reflection from the boundaries, some portion of the incident energy is lost from the signal. For operation in the surface duct mode, losses on specular reflection from the surface are represented by empirical formulae since there is no definitive theoretical work in this area. Contradictory reports in the current literature do not permit a reliable estimate of the surface reflection coefficient at the frequencies of interest for conformal sonars.

However, the surface may act in three ways to reduce the propagated signal:

See bibliography in Ref. 1

:1

- 1. It can scatter energy out of the propagation path.
- 2. It can absorb energy from the signal through the action of entrapped air bubbles.
- 3. Reflections from the faceted sea surface can degrade the phase coherence along the wavefront. (A potentially serious loss for highly-directional sonars, this loss applies only to the echo level, since the reverberation is considered to be incoherent.)

The AMOS FORMULATION represents the scattering attenuation coefficient (db/kyd) as a constant (depending on sea state) times (Frequency/Layer depth) 1/2, accounting separately for leakage loss from the sound channel. Where ray-tracing is used, the loss on specular reflection from the surface (in db) is given by a constant times the number of surface contacts. (Ray-tracing is not used when leakage from the sound channel is of concern.)

B. THE ECHO LEVEL DETERMINATION

With the propagation losses to the target calculated as specified above, the echo level calculation is essentially identical to the bottom-bounce model except that the signal processing gain has not been included in the echo levels in this report. The equation is:

Echo Level = Source Level + Target Strength

- Two-Way Propagation Loss

- Transmission Deviation Loss

- Reception Deviation Loss

(all in db).

(See Reference 1 for the definitions not appearing in this report). Often in surface duct echo-ranging, the cone angle of rays which usefully insonify potential targets is very small (on the order of a degree or so). Since most sonars have vertical beamwidths of 10 or 20 degrees, the corresponding transmission and reception deviation losses are negligible in this mode.

C. SURFACE REVERBERATION

Propagation conditions peculiar to the surface duct influence the relative sizes of the components of the total reverberation. With the sonar trained to take advantage of surface duct propagation, bottom reverberation encounters a large deviation loss (Ray paths to the bottom are general! well off the main beam.) However, propagation conditions often a such that the losses for paths to the bottom are much less than propagation losses to the target and DSL. The favorable propagation conditions to the bottom compensate for the large deviation losses, and bottom reverberation can become a significant background component. The determination of the bottom reverberation level is detailed in the bottom-bounce report.

Because of the characteristics of ray paths in the surface duct, and the shallow grazing angles involved, surface reverberation considered as a function of target range, falls off quite rapidly and does not usually present a problem for surface duct sonars. However, when a deep layer is present (very good sonar conditions), the duct can support ray paths which strike the surface at moderate grazing angles (on the order of 10°) and return an appreciable amount of surface reverberation to the sonar. This reverberation is only significant over the relatively small regions of time (or equivalent target ranges) when the ducted rays strike the surface at these sizable cycles. On a scope, this reverberation shows up as a series of annular rings, which may be readily identified and discounted by a trained operator. Accordingly, one may omit surface reverberation in the surface duct mode.

D. BIOLOGICAL REVERBERATION

The main source of biological (or volume) scatterers at frequencies of interest to bottom bounce sonars are fish with air bladders. These scatterers are generally observed in well defined layers (50 to 100 yards thick), exhibit diurnal movement, and are commonly referred to as the deep scattering layers. The characteristics of the DSL are discussed and additional references given in Reference 1. Propagation paths to the deep scatto ing layer have the same losses (or often lower) as the echo path. (Note, for example, that the shadow region occurs later for the DSL in Figure 1 than for the target submarine.) The calculation of the DSL reverberation level follows the method described in Reference 1; energy accounting leads to the general expression for the differential reverberation intensity:

$$dI = \mu(\theta_t', \theta_t') \kappa(\theta_t) \kappa(\theta_t) I_e(\theta_t, \emptyset) V_r(\theta_r, \emptyset) \cdot dA$$

- where: μ is the scattering coefficient, per unit area, characteristics of the deep scattering layer,
 - θ' is a grazing angle at the deep scattering layer (determined by ray-tracing),
 - V_r is the receiving intensity pattern function,
 - I_e is the transmitting source intensity function, which, for a single pulse, is given by

$$I_e(\theta_t, \emptyset) = I_o V_t(\theta_t, \emptyset)$$

with θ_{ot} , ϕ_{ot} fixed; and for RDT, is given by

$$I_{e}(\theta_{t}, \emptyset) = \max_{\substack{\emptyset \\ 0 \\ t}} [I_{o}(\emptyset_{ot}) V_{t}(\emptyset_{ot}, \theta_{t}, \emptyset)]$$

for θ_{ot} fixed,

where V₊ is the transmitting intensity pattern function,

 I_{o} is the peak source intensity function, and

dA is the differential area of concern.

The propagation losses on the transmission and reception paths are determined from ray tracing, where valid, or from the AMOS formulae as discussed earlier. The propagation factor for each path, including spreading, reflection and absorption losses, is denoted by κ .

To obtain the total reverberation, the differential DSL reverberation is integrated by numerical methods. The contributing area of the DSL is the locus of points on the DSL surface that have two-way travel times to the source and receiver equal to the echo travel time. For computational purposes, the specification of the contributing area of the deep-scattering layer is identical to the method used for bottom reverberation. It is generally assumed that the DSL scattering coefficient is omnidirectional hence, independent of the incident and scattering angles. The DSL reverberation integral completes the calculation of the echo-to-background ratio for systems using the surface duct mode.

The next section presents a numerical example, illustrating the methods discussed in the section.

SECTION II

ILLUSTRATIVE CALCULATION

This section presents the details of an illustrative calculation for the prediction of surface-duct performance for a C/P array. The numerical values of the input parameters used in this section were specified by Code 2110 of NEL. Some of the intermediate quantities required for this analysis were determined from various computer programs at TRG.

A. ARRAY AND ENVIRONMENTAL PARAMETERS

The following is a brief summary of the array and environmental parameters assumed. Sound velocity profile:

Depth (ft)	Speed (ft/sec)
0.0	4900.0
100.0	4901.8
200.0	4892.0
315.0	4880.0
700.0	4840.0
1100.0	4824.0
2000.0	4820.0
3000.0	4828.0
5000.0	4845.0
6000.0	4860.0
12000.0	4960.0

Bottom scattering coefficient: -27 db (Lambert's Law) Bottom porosity: 0.69 (Watson's formula) DSL coefficient: -45db Absorption coefficient: .033 $f_{kc}^{3/2}$ Pulse Length: 500ms. Frequency: 2500 cps. Bandwidth: 100 cps. Array dimensions: 8' (height) x 150' (length) Array tilt: 20°

Beam depression angle: 1° Ship speed: 25 knots Single ping operation

B. SOURCE LEVEL

Based on a power output of 0.6 watts/cm² x .556 kw/ft² of effective area the source level of this array was found to be 155.6 db re 1 μ bar² at 1 yd. It was computed as follows :

The source level equation is

Source level (db re 1 µbar² at 1 yd) = 101.6 + 10 log(Power out, kw) + Transmitting directivity index, db.

Based on the prescribed power density and an array factor

 $= \frac{\text{total active area}}{\text{aperture area}} \text{ of 100\%, the power out is .556 kw/ft}^2 \times 1200 \text{ ft}^2$ = 670 kw.(28.3 db). The broadside directivity index (DI) is 10 log(4 π x aperture area in wavelengths) using a nominal wavelength of 2 feet at 2.5 kc, the DI is 35.7 db.

For this illustrative example, the variation in source level which occurs when the array is steered away from broadside was ignored and the above source level was used for all beams. For a 100% array factor, the source level is 165.6. The actual value used; 155.6 db, corresponds to an array factor of 10% and a power output of 67 kw. While the intent of this investigation was for a 100% array factor, the results and conclusions will not be altered greatly by using this lower value for the source level. This insensitivity to the source level is due to the rapid increase in propagation loss with range in the shadow zone. This source level discrepancy was found after all of the calculations had been performed and since the essential conclusions would be unaffected, the calculations were not rerun. Also note that when one is in a reverberation-limited condition (which was generally true in this study), the echo-to-background ratios are independent of source level.

C. SURFACE LOSS (SPECULAR REFLECTION)

A prescribed loss of 7.11 db per surface contact was used in evaluating propagation losses from ray tracing calculations.

D. ABSORPTION LOSS

An absorption coefficient of $.033f_{kc}^{3/2}$ (= 0.13 db/kyd) was used to account for all absorption losses.

The absorption loss calculation was controlled by input in the TRG computer programs using ray tracing and the correct absorption losses were automatically included in the calculations. However the AMOS propagation losses, which were used were calculated by a separate program. A fixed absorption coefficient (proportional to $f_{\rm kc}^2$) and different from that given above is incorporated into this program. A simple hand-calculation sufficed to make all absorption losses used consistent.

E. SPREADING LOSS

The spreading losses to the targets at various depths were computed by interpolating smoothed data of propagation loss vs range produced from ray-tracing calculations performed on the IBM 7094. Ray solutions could not be found at target ranges beyond 3 to 5 kyd (depending on depth) and, for consistency, the AMOS equations to calculate propagation loss were for all target ranges beyond 3 kyd. This transition from ray tracing to AMOS is indicated by a dathed segment in the echo level curves plotted in Figures 2 through 11. A surface layer depth of 100 feet was used for this velocity profile.

The TRG OCEAN SWEEPER program, an IBM 7094 program used to compute bottom bounce echo and reverberation levels, was used to compute the bottom and DSL reverberation levels. This program automatically computes the spreading loss where a ray path exists. For the DSL at 600 feet, AMOS losses were used for ranges beyond the limiting ray path.

F. BOTTOM LOSS

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The bottom losses used for the higher order bottom reverberation calculations were obtained from the empirical equation developed by Dr. W. Watson of NEL (see Reference 1). A bottom porosity of 0.69 was assumed.

G. DSL REVERBERATION

The general reverberation intensity equation is given in Section 1. For convenience, it is rewritten below in decibel form:

DSL Level = (source level) + (DSL coefficient) - $2N_W$ + (integral of pattern functions) + 10 log R + 10 log ΔR

where R = range in yards, ΔR = width of reverberation annulus, in yards, and N_w = one way propagation loss.

(All quantities are in decibels, unless specified)

The integral of the pattern function and the width of the reverberation annulus were evaluated by the OCEAN SWEEPER program.

For this study two DSL depths were considered: 600 and 1200 feet; these depths correspond to typical night and daytime DSL depths, respectively. Propagation losses to the deepscattering layer were computed by ray-acoustics techniques where permissible. It was found that, for the 600 foot layer, ray-tracing was valid for times corresponding to target ranges out to 4 kyds, while the 1200 ft. layer allowed ray-tracing to 6 kyds. Otherwise the AMO3 propagation losses for a path equivalent to the path length to the DSL were used in hand calculations in the above equation for DSL reverberation. However, in the region in which it is valid, ray-tracing is preferred to AMOS values since the ray-path allows

an accurate computation of the deviation losses yielding generally lower, more realistic, values for the reverberation level.

The effects of the array pattern are reflected in the E/B ratio. At near ranges, the convoluted Echo/Background curves (Figures 12 through 23) are due, in part to the characteristics of the DSL reverberationas determined by the deviation losses.

H. BOTTOM REVERBERATION

Bottom reverberation is computed directly, by the OCEAN SWEEPER program as described in Reference 1.

For this velocity profile, first and second order bottom reverberation do not exist beyond 30 kyds. Where the trailing edge of the first order bottom reverberation curve cannot be plotted exactly, the curve has been extended with a dot-dash-dot line to fall off just below 30 kyds.

Second order bottom reverberation is evident only for an azimuth steering angle of 90 degrees. The low values of second order bottom reverberation at the other steering azimuths is due partially to an effect dubbed C/P "beam skewing" (See Reference 1 for discussion of C/P beam pattern behavior.)

1. SURFACE REVERBERATION

High initial values of the background-level curve are due to surface reverberation, which, in some instances, dominates the background level at 1 kyd. Beyond this range, it is negligible.

J. FLOW NOISE LEVEL

The equivalent isotropic spectral flow noise level was calculated from the formula supplied to TRG by NEL:

Spectrum level = -41.8 - 16.67f + .857v

where f = frequency in kc/sec and

v = ship speed in knots.

The spectral noise level was calculated as -27.1 db re 1 microbar/cps., for all cases considered here.

The equivalent plane wave noise level (see Reference 1) for the array is then given by:

L_{epw} = Equivalent isotropic-spectrum level - Receiver directivity index + 10 log(bandwidth).

For this array, at a ship speed of 25 knots, the flow noise level was -43 db re 1 microbar.

K. BACKGROUND LEVEL

This quantity is a power level summation of flow noise, surface, bottom and DSL reverberation. In Figures 2 through 11, the background level has been sketched in as a dashed line only where it does not rollow the contour of the highest of its component levels.

L. ECHO LEVEL

The echo level is calculated from the formula presented earlier; viz.,

Echo Level = Source level + Target strength -2N_w. - Reception deviation loss - Transmission Deviation loss.

A random aspect target strength of 15 db was assumed. Target depths of 80, 150 and 300 feet were investigated; these are typical best, average and worst case target depths for this layer depth.

M. RESULTS

Figures 2 through 11 present curves of echo level vs range for the three target depths and also show the corresponding background components. Figures 2 through 6 are for a DSL depth of 600 feet and for azimuthal steering angles of 1, 10, 30, 45, and 90° (broadside), respectively. Figures 7 to 11 are corresponding graphs for a DSL depth of 1200 feet. This latter set of curves is not physically correct in the decay of the DSL; this is due to the lack of an alternative propagation loss equation once ray tracing was invalid. (Recall AMOS is valid only to a depth of about 600 feet.) However, it is interesting to note the change in the shape of the background curves for the two DSL depths at the shorter ranges. For the shallower DSL, the background peaks sooner and higher; it also dies off sooner. Figures 12 to 23 are the corresponding plots of echo-to-background (E/B) ratio vs azimuth and range. The lack of smoothness in some of the plots is due to a discontinuity between the AMOS and ray tracing losses at the transition ranges. (See Figure 24).

In Section I, it was noted that propagation conditions often favor paths to the bottom over paths to the DSL and the target. This situation overcomes the discrimination against bottom reverberation provided by the array pattern, and bottom reverberation becomes a significant component of the background. Figure 13 provides a good illustration of the effect of bottom reverberation. The local minimum in the E/B ratio for steering azimuths away from endfire is due to the sudden appearance of first order bottom reverberation just as the DSL reverberation is dying off around 9 kyd (target range). The peak in the E/B near 15 kyd, is due to a reduction in the limiting bottom reverberation, due to a minimum in the vertical pattern of the array. (Figures 4 to 6 show the corresponding relative levels of the background vs. target range.) Typical azimuthal and vertical cuts through the beam patterns are shown in Figures 25 to 30. Near endfire, the vertical pattern is quite narrow. whereas near broadside, the vertical beam is relatively wide. The narrow vertical beams of the pattern for azimuthal steering angles near endfire provide more discrimination against bottom reverberation than the wide broadside beams. Consequently, higher E/B ratios are obtained for the azimuths near dead-ahead.

The tabular data for the sonar calculations are presented in Tables 1 through 30 which follow the figures.

The maximum detection range^{*} in this mode (assuming a recognition differential^{**} of 12 db) corresponds to an echo-tobackground ratio of -5 db (-5 + 17 db of processing gain = +12 db.) For the 150 ft target depth, one may observe that the maximum detection range increases as the beam is steered away from broadside. In this region, the limiting background component is bottom reverberation.

N. CONCLUSION

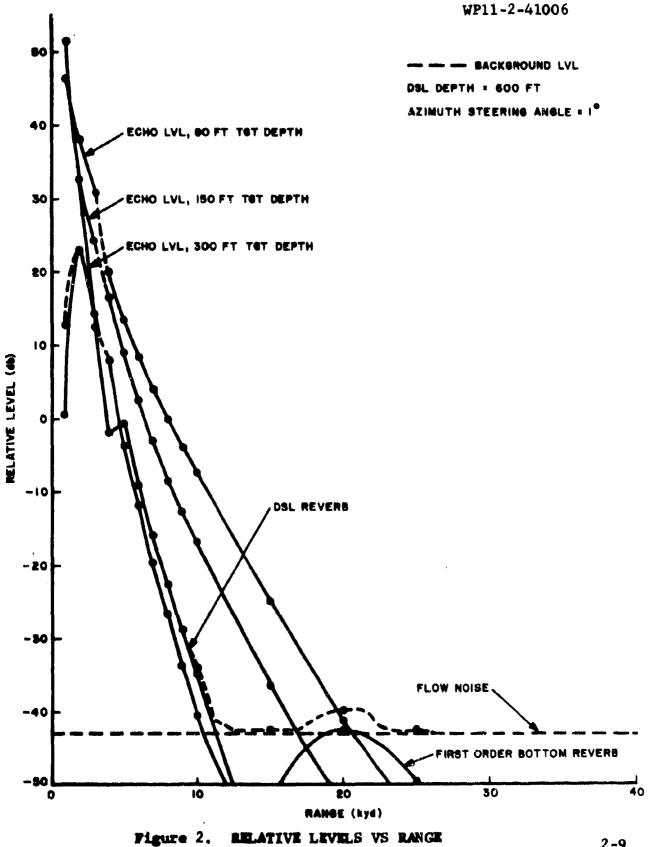
The particular example considered here involved too many simplifying assumptions to be realistic. For example, it would not be possible to use single-ping and a half-second pulse in a sonar of this size and still have a high enough data rate for successful detection. Another major limitation was the assumption of constant source level, independent of steering angle.

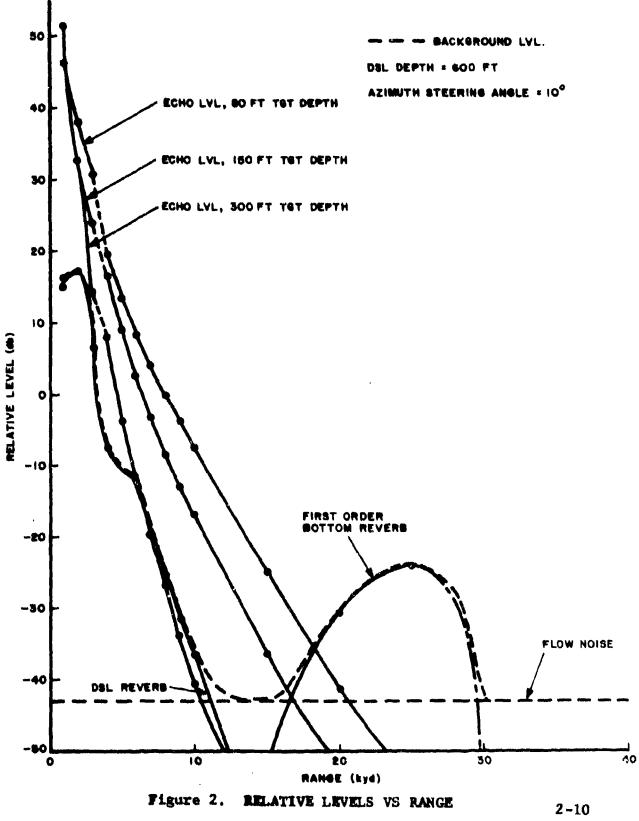
One may observe, from these calculations, the general characteristics of a C/P sonar using the surface duct mode, particularly the relatively good performance which can be achieved towards dead-ahead.

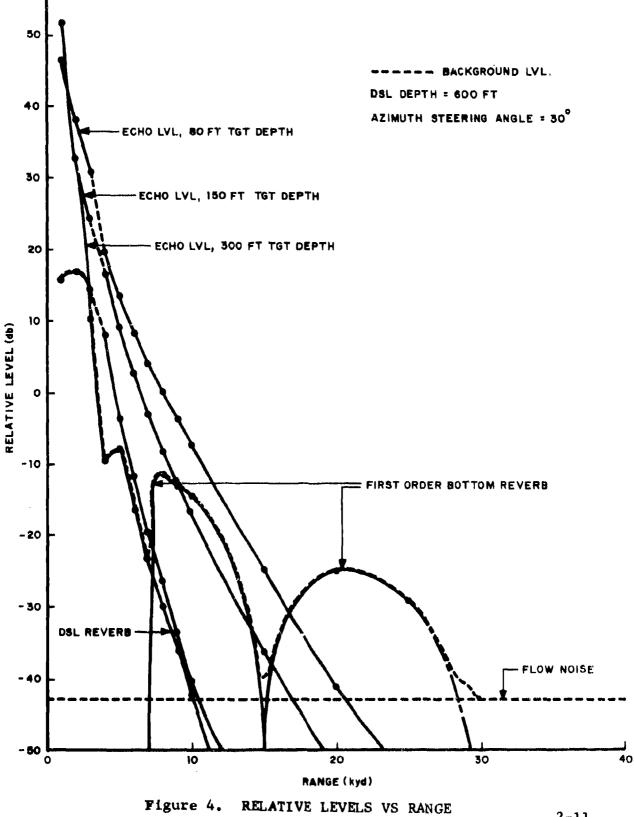
This model will be used for forthcoming C/P design and trade-off analysis. The simplifying assumptions made for this analysis were made for convenience. In the final design, a more general analysis will be performed.

[&]quot;Defined as maximum range at which one obtains 50% probability of detection.

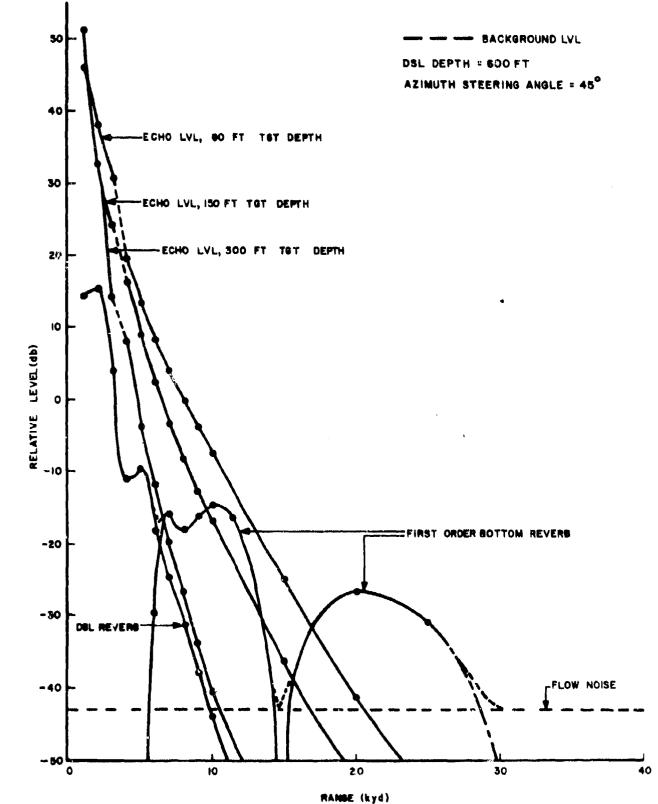
^{**}Required echo-to-background for 50% probability of detection.

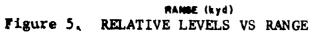


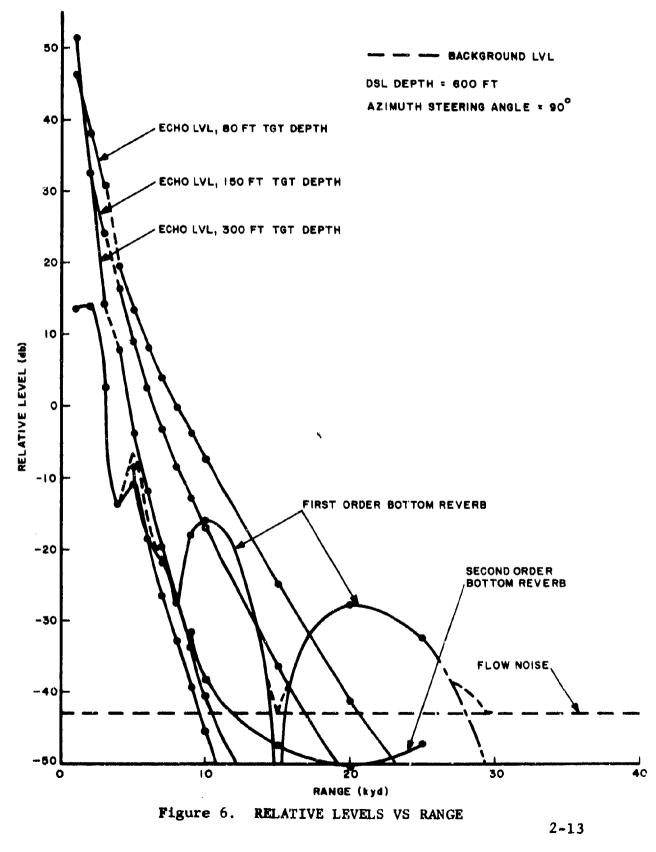




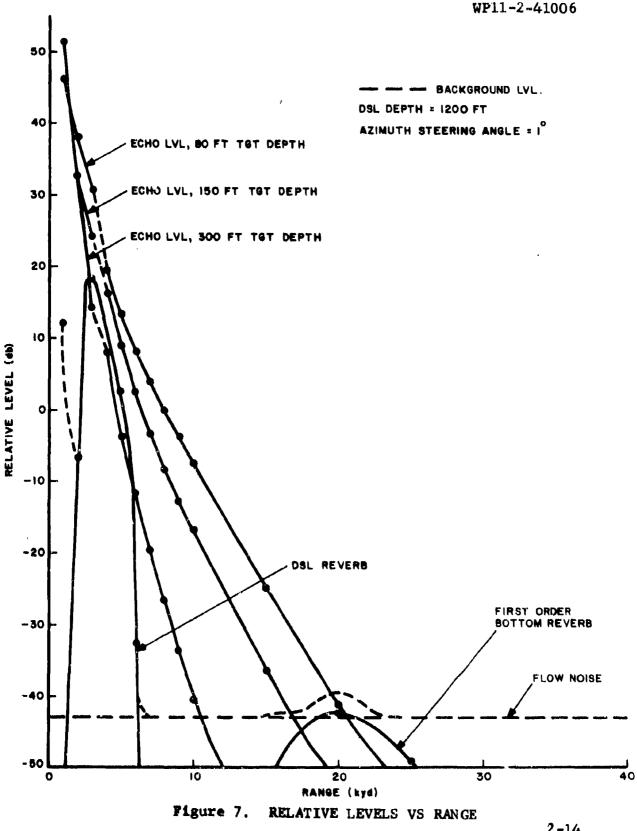
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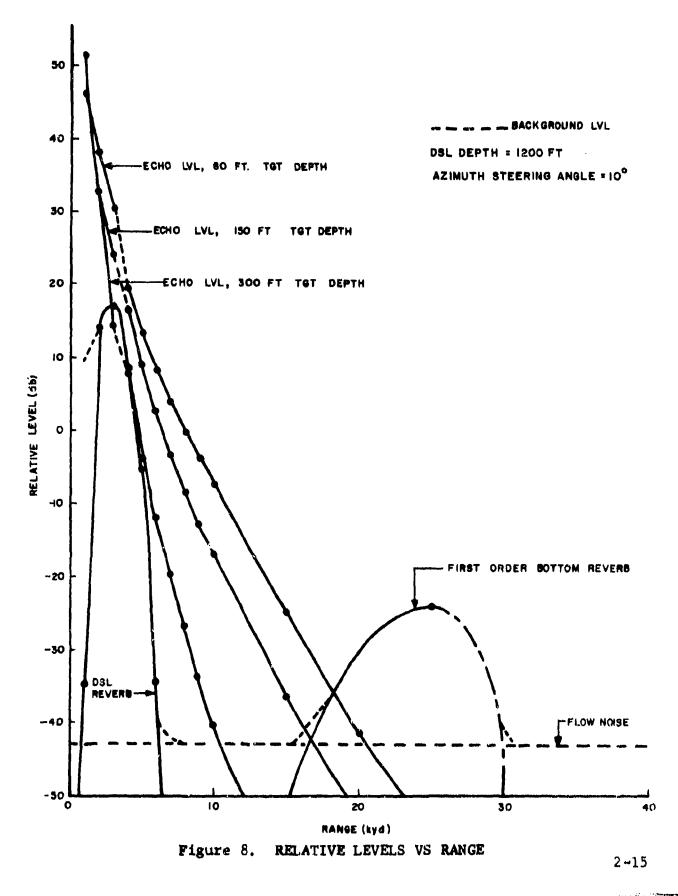
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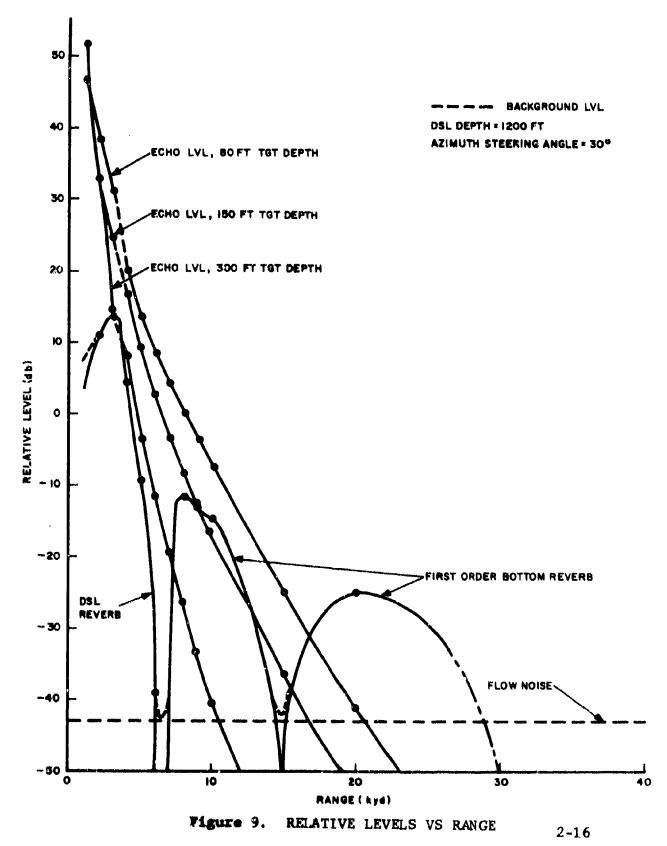
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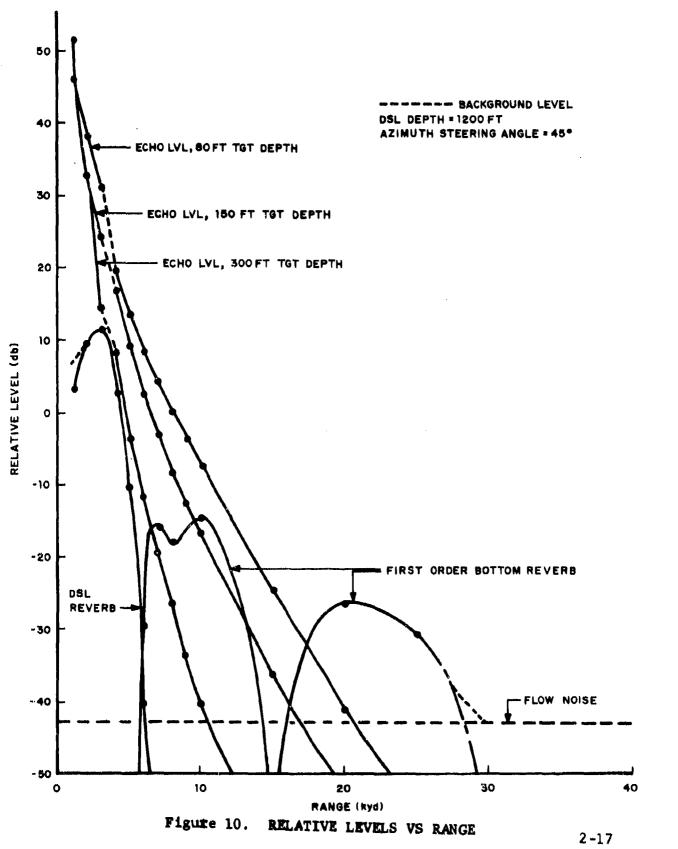
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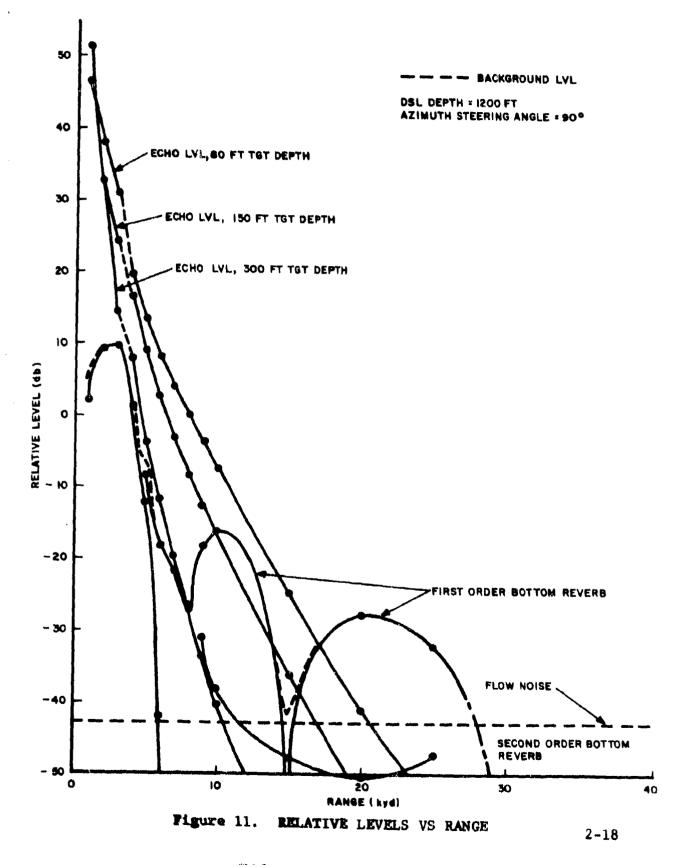
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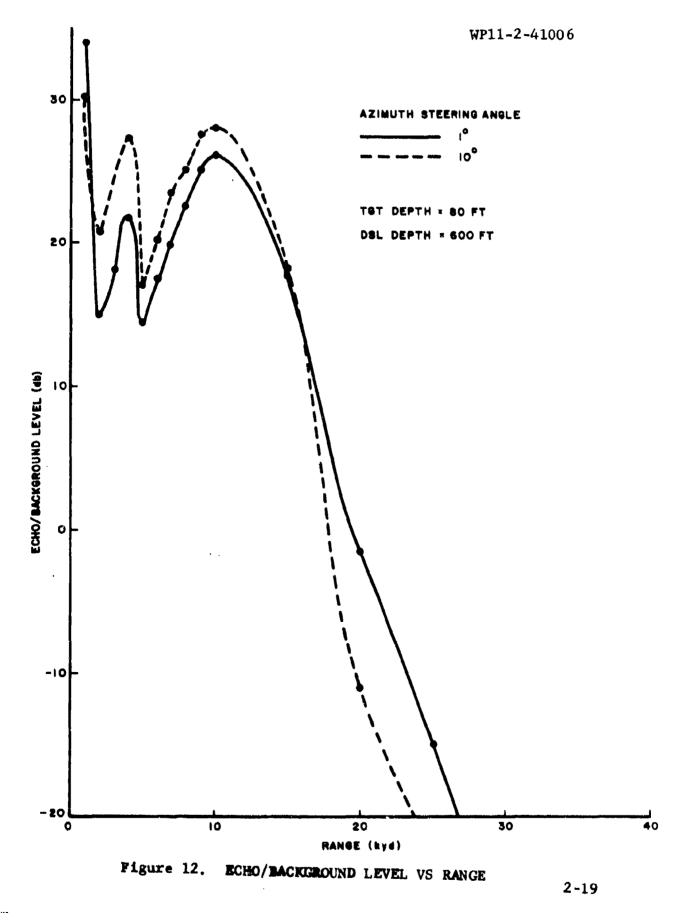
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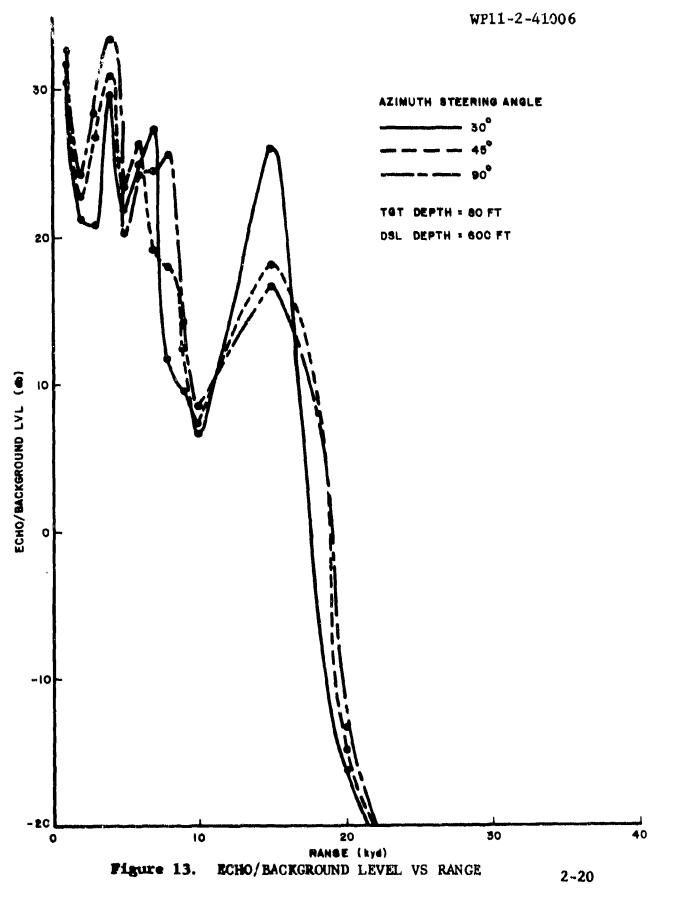
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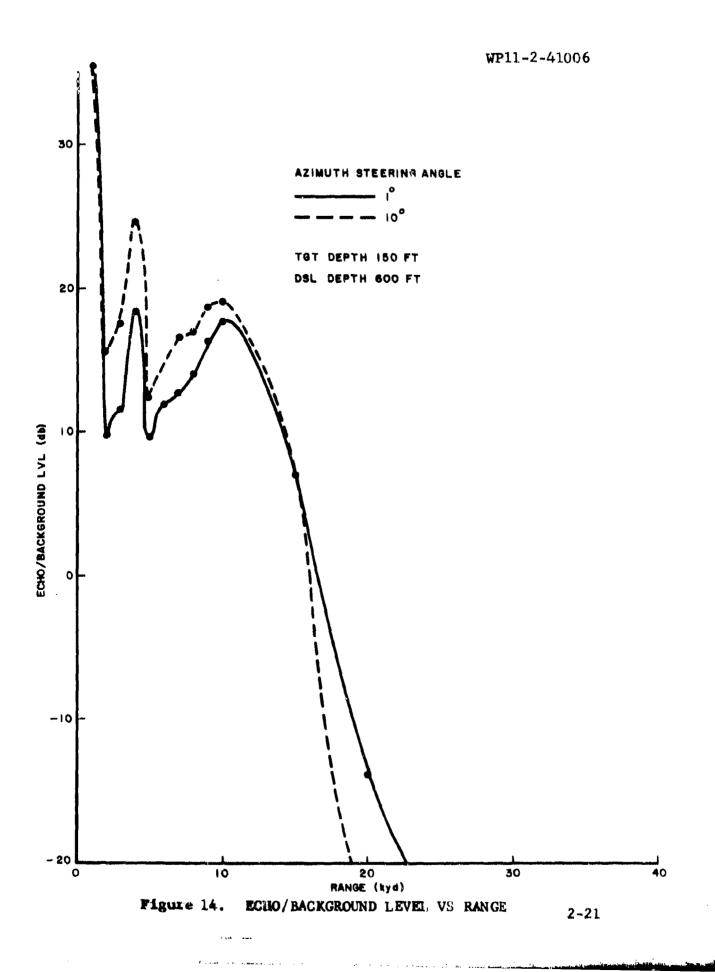


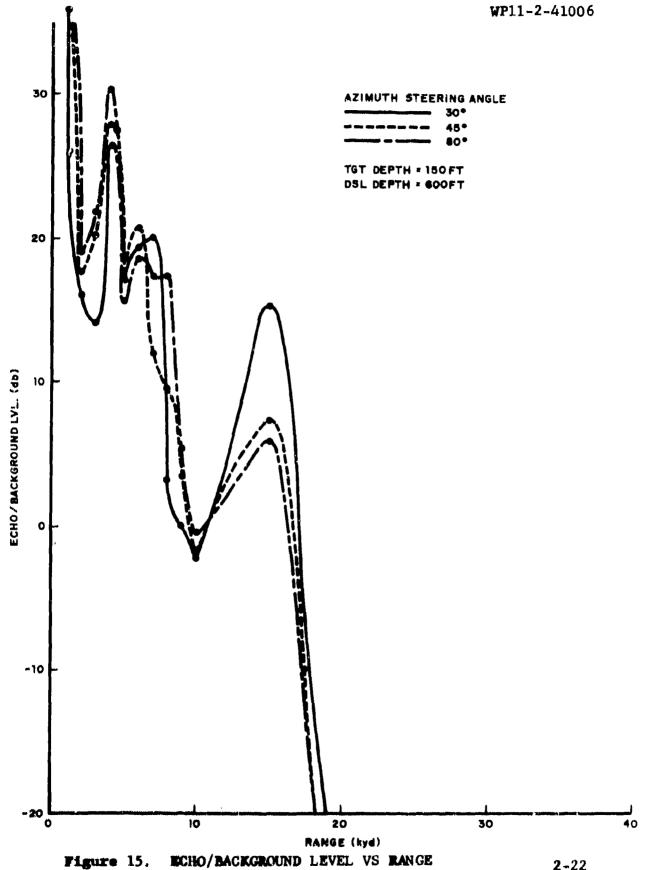


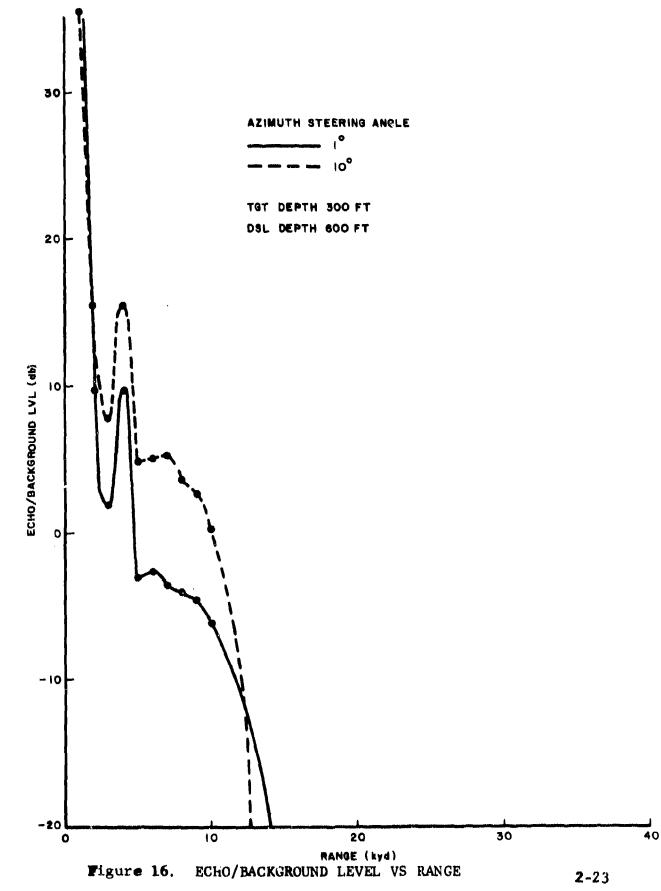
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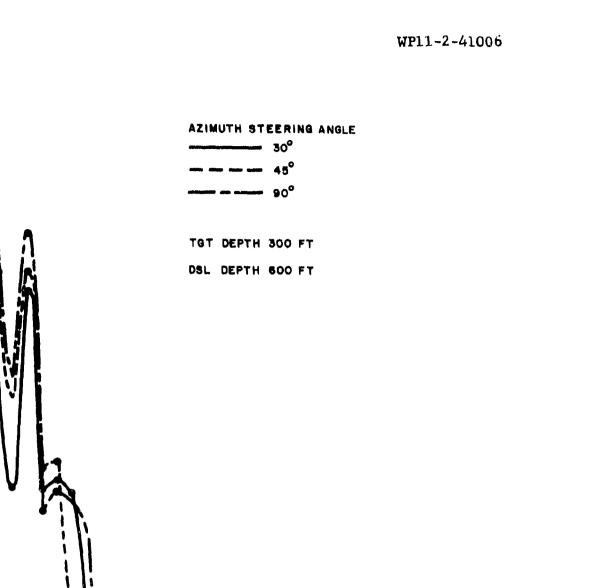
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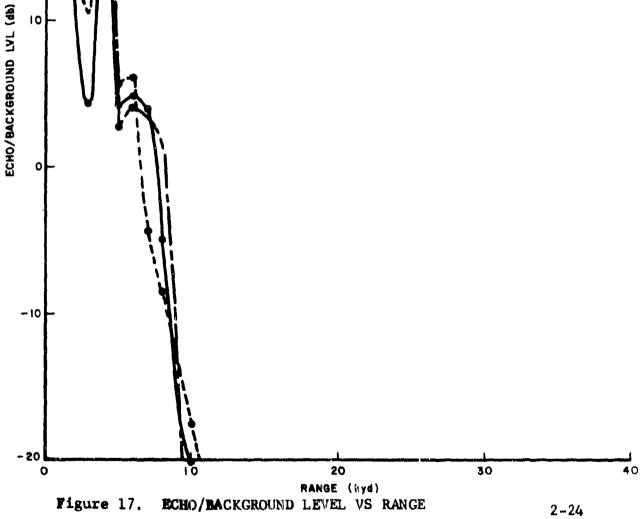


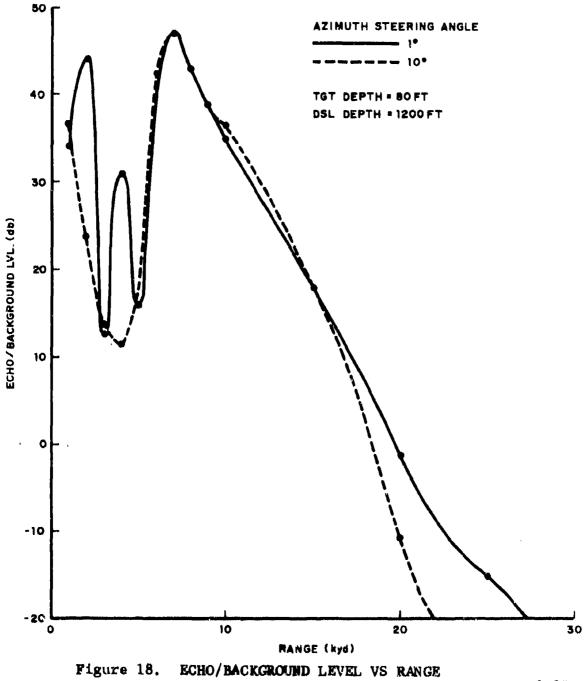
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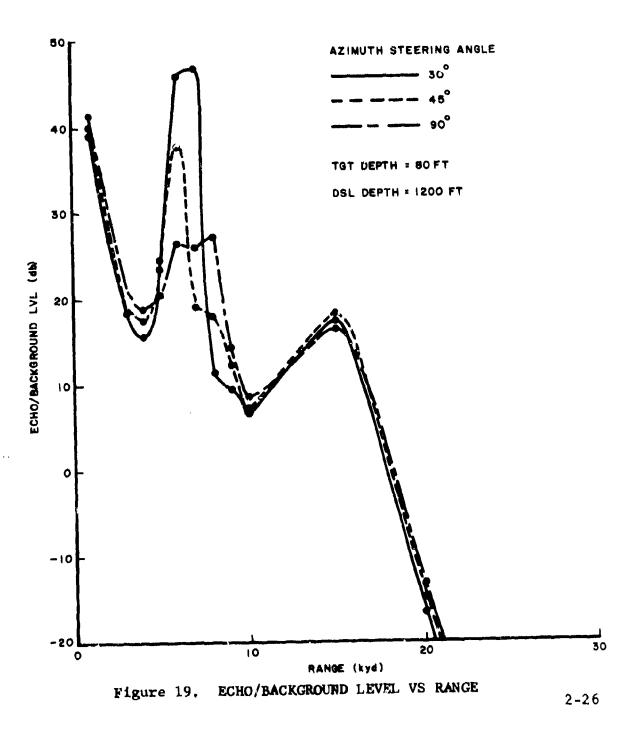
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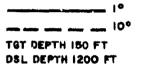


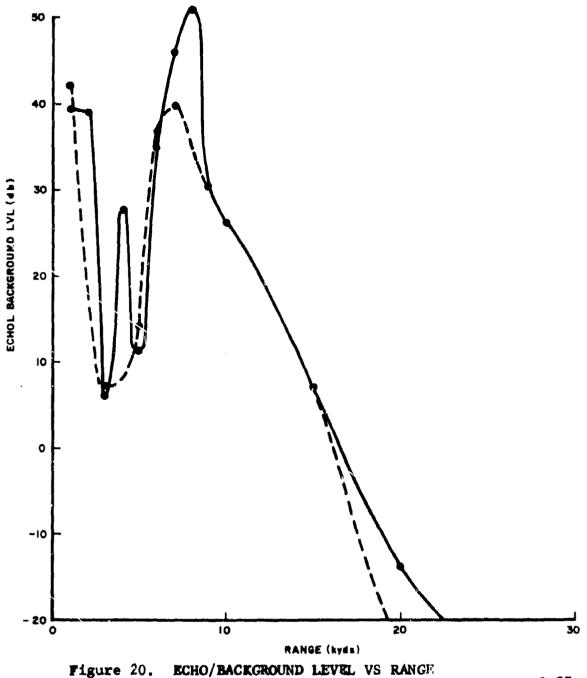


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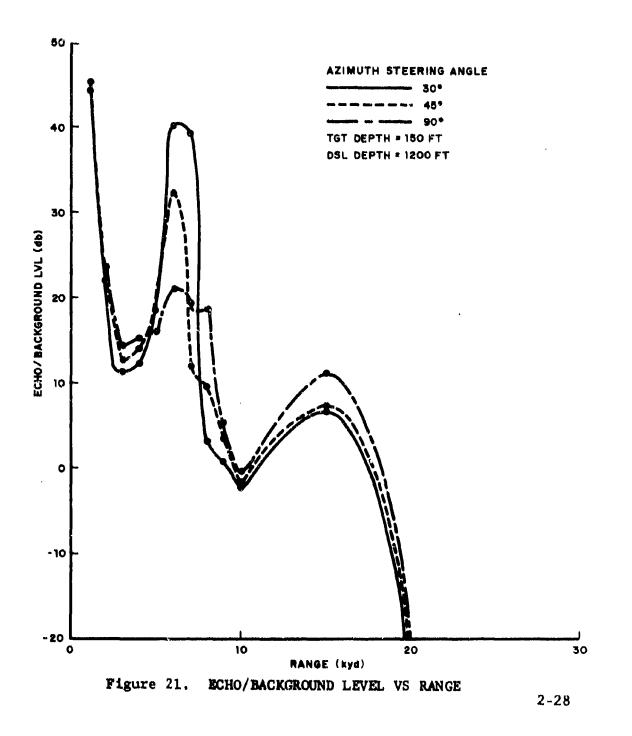


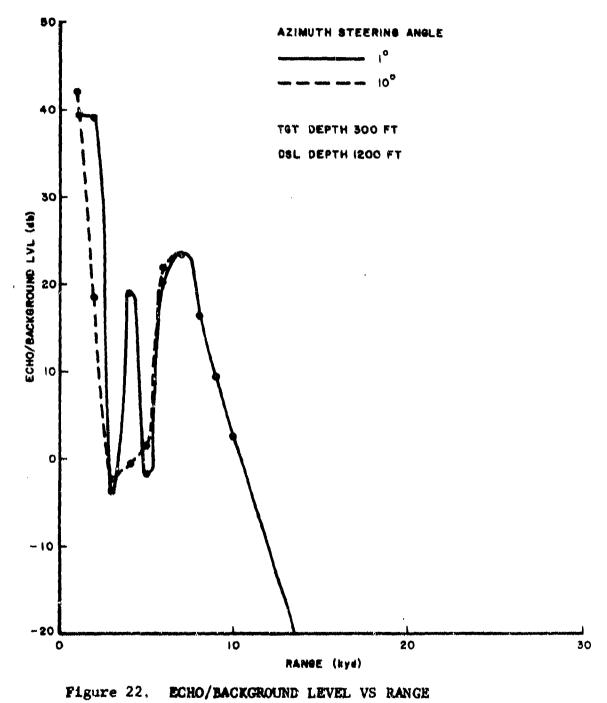




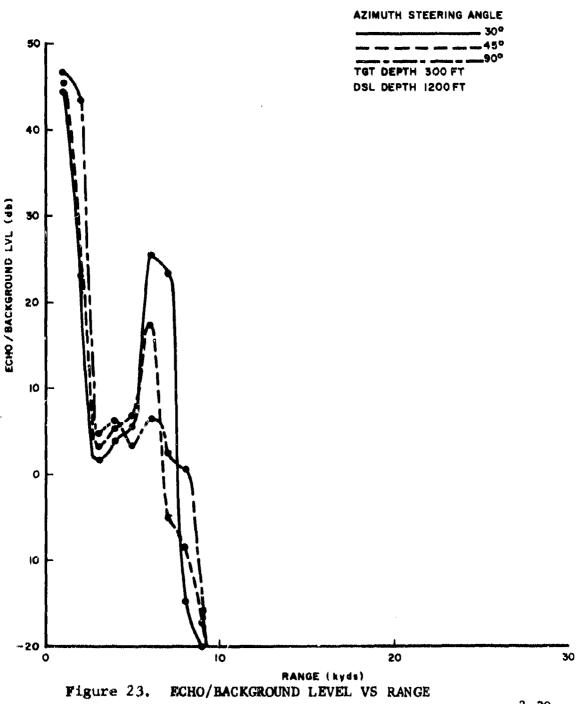
.

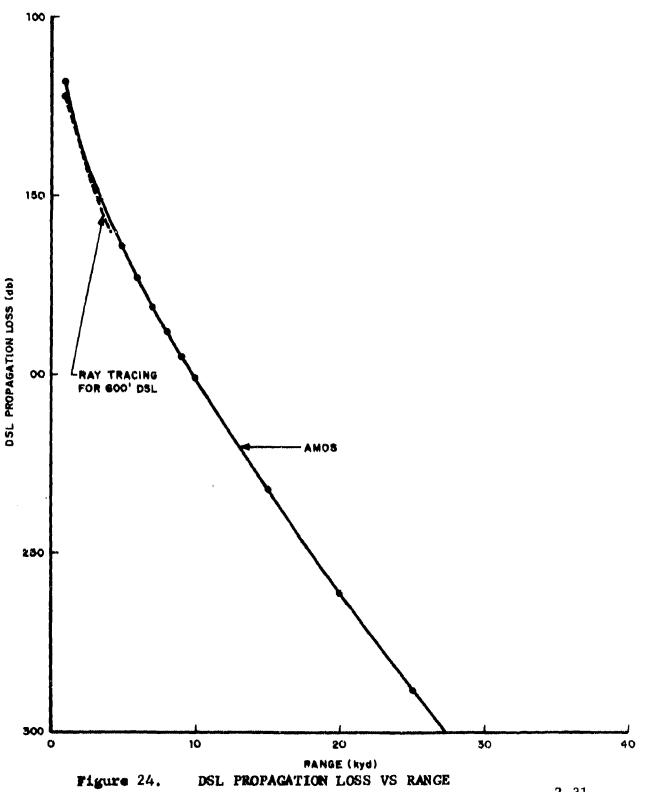






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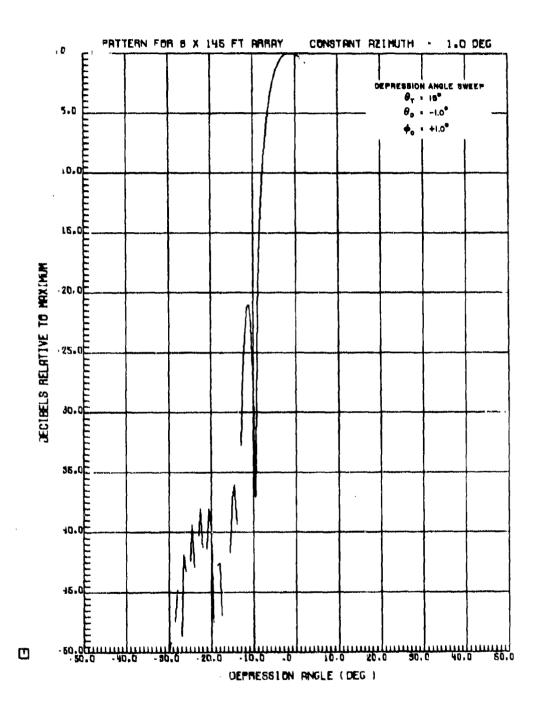


FIGURE 25

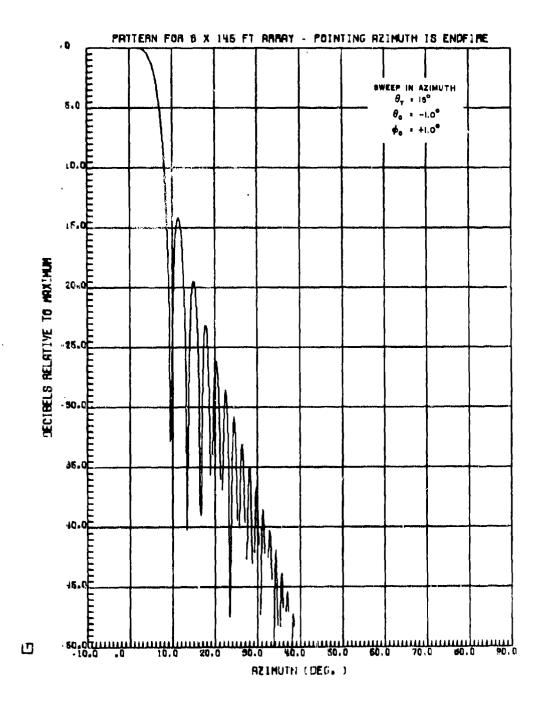
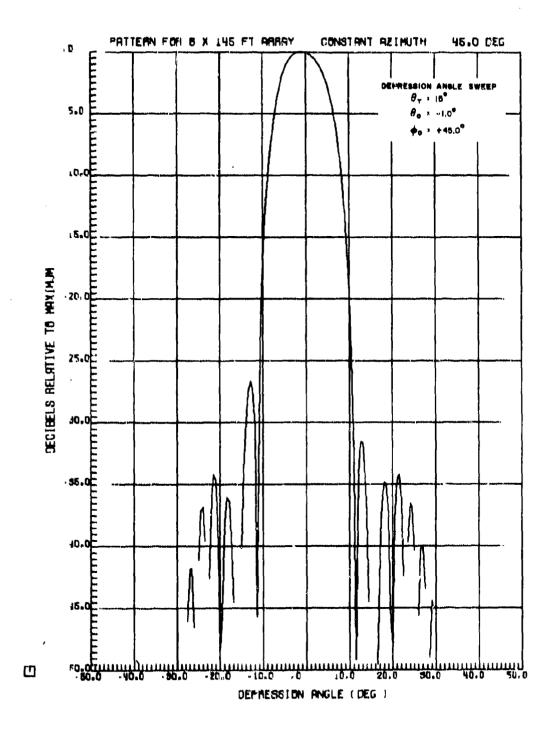


FIGURE 26

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FIGURE 27

Addin . Water and the state of the second

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te beren farten bereite bereite einen mertin stellte ihre unter beter ihren

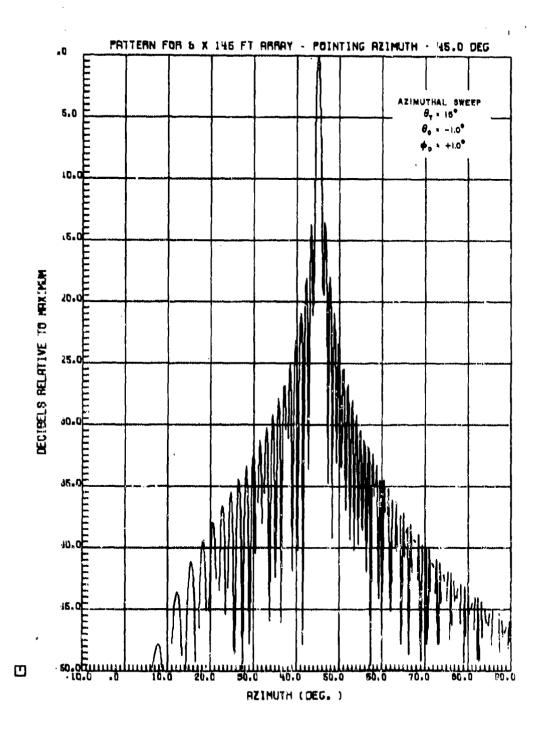


FIGURE 28

And an an in the second se

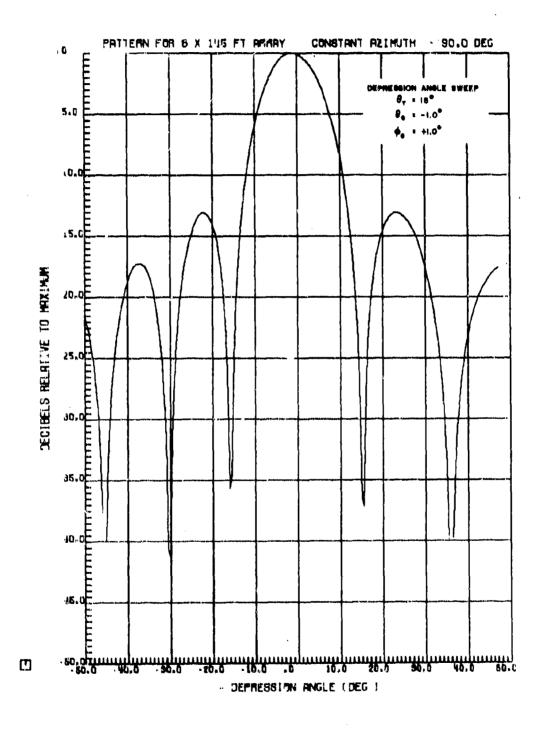


FIGURE 29

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and a second second

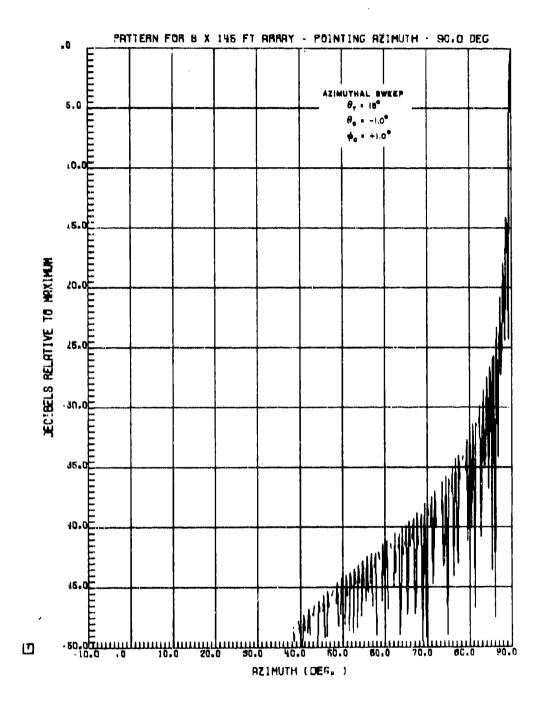


FIGURE 30

ſ	1	 		T	÷		, T		- <u> </u>		-		Ť	-	<u> </u>	· ·	V)	-' -	: 1	w p 1	1-2	2- <u>-</u> 4	100	6		
	Ecno/Backgrows Luz . 23	34.1	0.51	18.2	21.12	14.4	17.6	20.0	22 . 6	21.2	26.7	17 . 8	h. 1-	-14.9	-29.3	- 44 . 8	-19.6				1 600 Fr		· · · · ·			
	FCHO LEVEL	46.4	38 . /	30.9	19.9	/3.8	9.4	4.1.		-3.7	-7.5	-24.8	-41,2	1.12-	-72.3	- 87 . 8	-102.6				DSL DEPTH :		150' ARRAY			
	BKGRUD L.11. DB	12.3	23.1	12.7	-1.9	-0.6	-9.2	-15-9	-22.6	- 28.9	- 34.2	- 42.6	- 39, 8	- 42.2	- 43.0	-43.0	-43.0				•	•	FOR 8' x			
	Taran Rever	12.3	23.1	12.7	5.1-	-0.6	- 9 . 2	- 15 .9	- 22 . 6	-29 69	-34 .8	5.3 .2	- 42.6	-49,2		- 79 - 7	1.01.			····· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ··			KGROUND LEVELS	NOTE: TABLES 1 Thru 30:	ALLE STATE	BUN AVAILA
i	DSL REVERS	6.0.	23,1	12,7	- / . &	- 0.6	- 9 . 2	-15-9	-22.06	-29.9-	34,8	-64.2	- 91.2	-117.9	- 143.9	-169.6	0-181-			D DB RE I NBAR			1. ECHO/BACKGROUND	NOTE: IAB		
·	Juzz & Borray Rorers	12,23		-		- 95.8	- 78 , 7	. 1° 2/ -	8 87-	-63,7	-66.3	-23 مر		-49,2	- 90 . 1	- 79, 7	-70,6		· · · · · · · · · · · · · · · · · · ·	Fiew Norse AT 25 XIS = -43.0 28	PRIMUTH STEERING ANGLE = 1.		Table 1.	· · ·	· .	
	RANG	 `	~	~	2		7	~	0	0	\$	2 2	20.	2,5	30	35	40			FIEW Ners	REIMUTH	:				
		 										•	1	•	i -			ı			,		2	-38		
						1	: :		г 1 1	:	• • • •	 	1		۱		I								•	

9.7 11.4 17.4 17.4 8.1 7 6.7 8.1 8.1 7 6.7 8.1 7 6.7 8.1 7 6.7 8.1 7 6.7 8.1 7 6.7 8.1 7 6.7 8.1 7 6.7 8.1 7 6.7 8.1 7 7.6 7.1 7 7.6 7.1 7 7.6 7.1 7 7.6 7.1 7 7.6 7.1 7 7.6 7.1 7 7.6 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 7 7.1 7.1 <t< th=""><th></th><th>Range</th><th>JURF. & BOTTON</th><th>DSL Revers</th><th>Torne Revers Bugano Lue</th><th>Brganb Lut</th><th>ECHO LEVEL</th><th>E CHO LEVEL ECHO/BACKFROMP LUL.</th></t<>		Range	JURF. & BOTTON	DSL Revers	Torne Revers Bugano Lue	Brganb Lut	ECHO LEVEL	E CHO LEVEL ECHO/BACKFROMP LUL.
11 <		6771V		0	2	5		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	•		9.7	14.9	16.1	161	46.4	•
$\frac{1}{7}$		~		17 .4	17.4	17.4	39.1	
4 - - 1	- ,	a	1.	2.2.	6,7	6,7	30 .9	•
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 <th></th> <td>· /</td> <td> •</td> <td>~</td> <td>- 7,5</td> <td>-2,5-</td> <td>- 6- 6/</td> <td>27.4</td>		· /	•	~	- 7,5	-2,5-	- 6- 6/	27.4
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		5	~	· 1	E. E.	E1 E -	/3 .3	17 .1
7 $-74/5$ -26.5 -27.5		2	- 76 .6			-// .9		
1 11.05 25.3 25.3 25.3 25.3 27.3 1 1 1 1 1 1 1 1 1 1 </td <th></th> <td>7</td> <td>-74,7</td> <td>-19.6</td> <td>-19.5</td> <td>- 19.6</td> <td>4.1</td> <td></td>		7	-74,7	-19.6	-19.5	- 19.6	4.1	
9 -41.1 -31.2 -31.5 -31.5 -31.5 -31.5 -31.5 -31.5 -31.5 -31.5 -21.1 21.1 <th>, , ,</th> <td>8</td> <td>. T</td> <td>5.25-</td> <td>-25.3</td> <td>-21.3</td> <td>• 0</td> <td>25.03</td>	, , ,	8	. T	5.25-	-25.3	-21.3	• 0	25.03
n -10.6 -31.5 -31.5 -31.6 -11.6 21.1 K -53.1 -10.1 -31.5 -31.6 -11.6 21.1 Z -53.1 -10.1 -31.5 -31.6 -71.6 21.1 Z -53.1 -10.1 -12.5 -30.1 -71.8 -71.1 -23.3 Z -71.1 -73.0 -77.1 -73.2 -73.1 -73.3 -74.4 -73.1 -73.2 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 -74.4 -77.4 <th></th> <td>6</td> <td>2027-</td> <td>-31.6-</td> <td>- 3/ 0 6</td> <td>8.12-</td> <td>-3.2</td> <td>27.6</td>		6	2027-	-31.6-	- 3/ 0 6	8.12-	-3.2	27.6
K -53.1 -6.5 -3.5 -3.6 -3.16 -3.4 71.8 20 -70.1 -93.5 -30.3 -41.4 -70.4 71.4 27 -24.6 -77.6 -37.1 -33.1 -33.1 26 -91.9 -72.6 -24.0 -72.3 -44.4 26 -91.4 -12.5 -91.5 -33.1 -33.1 27 -91.1 -72.3 -42.0 -72.3 -44.8 40 -101.1 -79.7 -73.0 -72.3 -44.8 41 -101.1 -79.1 -73.0 -72.6 -74.4 40 -101.1 -79.7 -73.0 -72.6 -74.6 41 -11.1 -73.0 27.14 -73.6 -74.6 7 -11.1 -73.0 27.14 -74.6 -74.6 7 -11.1 -74.5 27.2 27.1 -74.6 7 -11.1 -73.0 27.1 -74.6 -74.6 -74.6 7 -11.1 -74.5 -74.6 -74.6		9/	-60.6	-36.5	-36.5	-3156	-7.5	28.1
20 -30.6 -30.3 -41.8 -70.4 21 -24.0 -72.5 -34.6 -71.1 -33.1 21 -24.0 -72.6 -34.6 -71.1 -33.1 21 -24.0 -72.6 -34.6 -71.2 -33.1 21 -91.6 -191.0 -191.0 -191.0 -33.1 21 -101.1 -192.3 -94.4 -43.0 -72.3 -29.3 21 -101.1 -192.1 -192.1 -192.1 -192.1 -74.6 -74.6 21 -101.1 -192.1 -192.1 -192.1 -192.1 -74.6 -74.6 21 -101.1 -192.1 -192.1 -192.1 -192.1 -743.0 -77.6 21 -101.1 -192.1 -192.1 -192.1 -743.0 -77.6 -743.0 -77.6 21 -101.1 -192.1 -192.1 -192.1 -79.1 -79.1 -79.1 21 -101.1 -101.1 -192.1 -192.1 -79.1 -79.1 -79.1 -79.1 -	• .	15	-53.1	۲	-53.0	9.24-	2 42-	17.8
1 -24,0 -71,0 -77,1 -33,1 30 -97,4 -97,6 -91,6 -72,3 31 -94,4 -172,3 -94,4 -72,3 37 -94,4 -172,3 -94,4 -72,5 37 -94,4 -73,0 -72,3 -94,4 40 -101,1 -172,3 -94,4 -43,0 -44,5 40 -101,1 -192,1 -92,5 -92,5 -92,5 40 -101,1 -192,1 -192,1 -192,1 -73,6 5 5 5 5 5 5 5 7 7 -101,1 -192,1 -73,0 5 5 7 5 5 -192,1 -73,0 5 5 5 7 7 -101,1 -101,1 -73,0 7 5 5 5 7 7 -101,1 -101,1 -101,1 -73,0 7 5 5 5 5 5 5 5 5 5 5 5 5		20	-30 .6	5	-30,6	5108-	-41 .2	•
30 -97.6 -146.6 -87.6 -72.3 -94.4 -72.3 37 -94.4 -172.3 -94.4 -42.0 -97.6 -44.6 40 -101.1 -197.1 -101.1 -197.6 -72.3 -44.6 40 -101.1 -197.1 -197.1 -101.1 -73.0 -92.6 -44.6 40 -101.1 -197.1 -197.1 -73.0 -92.6 -74.6 7 7 -101.1 -73.0 36.1 -73.0 -73.6 7 7 -101.1 -701.1 -73.0 50.1 -74.6 7 7 -101.1 -701.1 -73.0 70.1 -74.6 7 7 -101.1 -701.1 -701.1 -73.0 70.1 7 7 -101.1 -75.0 26.7 -74.6 7 7 -101.1 -25.1 -70.1 -70.1 7 7 -25.1 -70.1 -73.0 70.1 7 7 -74.1 -75.0 70.1 -74.0 7 7 -75.0 26.1 -77.0 70.1 7 7 -75.0 27.2 27.2 27.2 <		210		-120 . 5	-24,0	-24 ,0	57.1	- 33, /
3r -91,4 -172.3 -84,4 -43.0 -97.8 -44.8 40 -101,1 -197.1 -101,1 -43.0 -97.6 -44.8 Flau Noise Ar series = 43.0 D8 Rr 1 pistit -101,1 -43.0 -43.0 -77.4 -57.1 Armury Sreeking Angre = 10° 351. Deprive 10° 251. Deprive 10° 551. Deprive 10° 51.00		30	-87.8	-146 . 6	- 87.8	-43.0	-72.3	-29.3
40 -191 •1 -197.7 -101.1 -43.0 -102.6 -59.6 Flaw Nose AT 25 x15 = -43.0 D8 AF.1 µ8AT -108.4 -53.6 20.5 778401 b5.6 20.5 7774 = 600 FT Armura Steesing Angue = 10° 35.6 25.6 26.0 56.7 35.6 20.5 77 Table 2. ECHO/BACKGROUND LEVELS FOR 8' x 150' ARRAY 25.6 20.5 77.7 20.5 77.7		35	•	-172.3	- 84 . 4	-42,0	- 8- 28-	-44.8
Figur Muse AT RE KIS = -42.0 DB RE 1 JUBAN ATIMUTH STEERING ANGLE - 10° JSL DEPTH = 10° JSL DEPTH = 10° Table 2. ECHO/BACKGROUND LEVELS FOR 8° × 150° ARRAY		40	1.101-	- 7227-	1.101-	- 43,0	-102 .6	-59.6
Fim Noise at as wis = -43.0 DB AF 1 JUBAT Atimutal Steering Angle = 10° DSL DEPTH = 600 FT Table 2. ECHO/BACKGROUND LEVELS FOR 8' & 150' ARRAY								
Flow Noise ar RCKIS = -43.0 DB Re 1 JUBAN Armury Steeping Angle = 10° DSA DEPTH = 60° Fr Table 2. ECHO/BACKGROUND LEVELS FOR 8° x 150° ARRAY	- - - - -							
Azimury Greening Angue = 10° Depty = 10° FILMURY Steering Angue = 10° FILMURY Table 2. ECHO/BACKGROUND LEVELS FOR 8' x 150' ARRAY		FLOW Nor.		23 RE	}	1 1 	TARGET DEPTH	- <u>90</u> . FT
Table 2. ECHO/BACKGROUND LEVELS FOR 8' x 150' ARRAY		AZIMUTH	I STEEPING ANGLE		•	•••	256 DEPTH :	600 Fr
	2		ТаНа					2-4
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•	JURF. & BOTTOM	DSL REVERS	TOTAL REVER	Breens KI	ECHO KENCL	ECHO/BACKSROOND LUZ.
R. & U. E. P.		. 80	80	23		88
						-
ر. ار	5,2	1505	15.9	15.9	46.4	50.5
	1.	16.8	16.9	16.9	38 .1	21.3
		10.12	1012	10.2	30.9	20.7
	1-	- 7,7	-9.9.	-9.8	-	29.7
- 74	- 79.6	0.8.	0.8-	0 %- 8-	13 . 8	21.8
-63	2.9	16.6	-16 16	-15 6	9.9	25.0
-52-	7.1	-23.3	-23 23	-23.03	4 1	27.4
-11-	. 7	- 30 . 0	-11 , 7	1. 11.	0	// • 7
- 13	13 . 4	-36 . 3	-13,4	-13,4	-3.7	9.7
-14	. 3	-42 .Z	-14 .3	-14 .3	-7	6.8
15-		. 71.2	. 2. 12.	0115-	-24 8	26.2
52-	-24.9	- 38. 6	-24.9	-24.9	-41 .2	- 6.3
-29.1	201	1.961-	- 29 . 1	- 29.0	1-22-	-29.1
47-		-15/13	-64 00	- 43.6	-72 -3	-29.3
-13	- 63 . 2	-177,0	- 63 .2	-43.0	-8. 78-	-44.9
7.5-	-52.66	-202.4	-57 6	-42.9	-102 -6	-57.6
		· · ·				•
Frow Norse Ar 2.	AT 25 KTS = -43.0 DB	1 04	X		TARLET DEPTH	- <u>69</u> - FT
5002	AZIMUTH STEERING ANGLE =	30°		- 1 - - - - -		600 55
						· · · · ·
	Table	3. ECHO,	ACKGROUND LEVELS	I.S. FOR 8' x	150' ARRAY	-410
•	•	1 1 1				
	• •			•	: • •	· · · · · · · · · · · · · · · · · · ·
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<u><u></u></u>	RANGE JURF. & BOTTEN	DSL REVERS	TorAL REVER	BKGRUD KIL	ECHC Lover	ECHO/BACKGROWN LUL .
	Rever by	28	84		23	20
				••	-	
	1.7	14.4	14.7	14.7	46.4	31.7
n 		1.3	15.3	15-3	38./	22.9
~	. .	4.0	4.0	4,0	30.9	26.9
	- 1.		-11.2	-11.2	.9.9	31.1
	-69.2	-9.5	-9.5	- 9,5	13.8	23.3
	- 25 - 3	1. 8/-	-18.0	- 18 .0	9.9	26.4
		8.42-	-15 -1	-15 1	4.1	19.2
0		-31 +5	-18 20-	-18.0	.0	1. 21
••	-16 -1		1. 7/-	-16.1	-3.7	12.4
	- 14 7	Į	-14.7	-14 2	- 7 2	7.2
	-7.1 - 7	- 72 - 7	4.12.	- 43.0	-24.8	19.2
	-26.4	1.00/-	+ - 26 - 4	1.75-	-41.2	- 14.9
	-30 .7	-126.7	- 30 . 7	-30.4	. 57.1	-26.7
30	F + 7-	-152.8	-64 4	0' EH-	-72 . 3	-29.3
2	-63.7	-178 .5	- 63 . 7	-43.0	- 97.9	-44.8
4	-5-8-3-	-203.9	-58,3	-43.0	7.201-	- 19.6
 				-		-
			•		• • • •	
From	From Nevse Ar 25 xrs = -43.0 23	3.0 23 RE : 43AR	91	- 1	TARGET DEPTH.	- 90 65
Azim	AZIMITU (TEEPING ANGLE = 450				\sim	600 Fr
				•••		
: 2-	Table	4, ECHO	BACKGROUND LEVELS	FOR 8' x	150' ARRAY	410
41	, , , ,			•••••••••••••••••••••••••••••••••••••••		
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EcHo/BACKGROWN LUL	20	32.9	24.2	29.4	3.2.6	20.3	24.3	24.6		14 25 St	2 0 1	1	1 2 4 2 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	- 27 . 5	-29.3	9. 44.	7. 5	•••	•••	90 FT	600 Fr		· · ·	· · · · ·		
Lever	63	46.4	39.1	30.9	19.9	3.8	9.9	4 . /	.0	3.7		-24.9	-41.2	1.12-	-72 .5	- 62 . 6-	-102.6			TARGET DEPTH -	- (\)		ADDAV			
Brig	. 80	 13.6	13.9	2.5	-/3,7	-6 2	-11-9	-20.5-	-25.8	-17 - 9	-16.1	-41 .5	-27.7	-29:8	-43.0	-43,0	-43.0					· · · · ·	TOP 81 -1501			
Revers.	81	13.6	13.9		-13.7	-6.5-	-15.9	- 20 . 5	-25.8	-17 - 9	1. 7/-	-47.0	27.8	-32.1	-65.05	-64.5	-19.2					· · · ·	HO/RACKCROTIND I RUELS			· · · · · · · · · · · · · · · · · · ·
DSL Revered	23	13,3	13 .9	2	-13.7	0. //-	5. 61-	-26.3	3.	-34:3-	:-45.2:	-74:2 ¹	7.101-	-129.2	1	- 1 80.0	-201.4		•**	O DB RE I HEAR	906		E E	5	· · · ·	
Juge & B	REVERA DE	2.2	1.		- 1-	6-8-	5.81.	-21,9	-27.4	•	-16.1	-47.0	-27.8	1.22.	-65,5	-64.5	-59,2			E AT 25 X15 = -43.0 DB		and the further and the	Tahlo 5			
RANGE	59/2		~	67	7		7	~		0	\$	~	20	36	30	35	40			Flow Norse	Brue Tu				•	•
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WP11-2-41006				, , ,					1.1
Nilk Aritik	1	RANGE	JURF. & BOTTOM	R.	ToraL REVERS		ECHO LEVEL	Echo/BackgRown Lu	1
1 12.3 12.3 12.3 12.3 12.1 12.7 12.1 12.7 12.1 12.7 12.1 <t< th=""><th>¦</th><th>Saix</th><th></th><th></th><th>84</th><th>80</th><th><u>88</u></th><th>60</th><th></th></t<>	¦	Saix			84	80	<u>88</u>	60	
2 73.1	•		2.01	0.	1	1 .	51.	39.5	
3 -7 7	: 			1		4	{·●	6.6	
V $-9/4$	• • • •	<u> </u>	 	12.7	12.7		24 3		
(r) $-q_{1}q$ $-q_{1}c$		-	1.				, j c , j	19.5	
L -78.7 -9.2 -9.2 -9.2 -3.1 -3.5 -9.2 -3.1 -3.5 -9.2 -7.5 -9.2 -7.5 -9.4 -7.5 -9.4 -7.5 -7.5 -9.4 -7.5 -9.4 -7.5 -7.5 -9.4 -7.5			- 95.8		-0.6		. 1. 6	7.9	
7 76.1 77.3 -15.4 -15.4 -15.4 -15.4 -15.4 -12.6 -12.6 71.7 9 -13.7 -23.6 -34.8 -34.2 -28.6 -12.6 71.7 9 -6.2 -34.8 -34.2 -28.6 -12.6 71.7 9 -42.6 -34.8 -34.2 -37.6 -76.7 71.7 7 -42.6 -37.8 -37.6 -76.7 -12.6 -72.6 <		7	- 78 . 7	- 9 . 2					
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9 -63.7 -81.9 -89.9 -12.5 -11.6 7.6 10 -62.5 -11.8 -31.8 -31.2 7.6 11 -53.5 -11.8 -31.8 -31.2 7.6 12 -72.6 -72.6 -72.6 -72.6 12 -72.6 -72.6 -72.6 -72.6 12 -79.1 -71.9 -73.6 -72.6 26 -79.1 -71.9 -72.6 -72.6 27 -79.1 -73.6 -73.6 -76.6 26 -79.1 -73.6 -73.6 -76.6 27 -79.1 -73.6 -73.6 -76.6 26 -70.1 -70.6 -76.1 -73.0 26 -70.1 -70.6 -73.6 -76.7 40 -70.6 -76.6 -73.0 -79.7 40 -70.1 -70.6 -79.0 -70.9 40 -70.6 -73.0 -79.6 -66.4 40 -70.1 -70.6 -73.0 -79.7 40 -70.1 -70.6 -73.0 -79.7 41 -70.1 -70.6 -73.0 -79.7 40 -70.1 <td< th=""><th> </th><th></th><th>1.82-</th><th>: -22,56:</th><th>- 22 . 6</th><th>-22.5</th><th>· 1</th><th> I</th><th>•</th></td<>	 		1.82-	: -22,56:	- 22 . 6	-22.5	· 1	I	•
n -24.2 -34.8 -34.2 -16.16 17.7 1 -53.5 -42.8 -37.6 -37.6 1.0 2 -47.4 -91.2 -42.6 -97.2 -17.6 1.16 2 -47.2 -91.2 -47.1 -39.8 -7.6 1.16 2 -47.2 -91.2 -47.2 -91.2 -17.6 1.2 3 -90.1 -17.9 -97.2 -17.0 -7.8 2.2 3 -79.1 -17.9 -79.2 -17.0 -7.8 2.2 3 -70.1 -17.9 -79.1 -17.0 -21.2 2.2 3 -70.1 -17.9 -79.1 -17.2 -21.2 3 -70.1 -17.9 -79.6 -10.2 -20.4 40 -70.6 -70.6 -79.6 -20.4 40 -70.6 -79.6 -70.6 -70.6 40 -70.6 -79.0 -70.6 -70.6 40 -70.6 -79.0 -70.6 -70.6 40 -70.6 -79.6 -79.7 -70.6 41.1 -70.6 -79.6 -79.6 -70.6 51.1 -70.6 <td< th=""><th>1. </th><th>0</th><th>-63.7</th><th></th><th></th><th>- 28.9</th><th>-12.5</th><th>14 - 16.</th><th>- X.</th></td<>	1. 	0	-63.7			- 28.9	-12.5	14 - 16.	- X.
If -33.5 -4/2 -31.6 -31.6 7.6 2 -4/2 -9/2 -4/2 -36.6 -7.6 -1/2 2 2 -9/2 -1/2 -1/2 -9/2 -7.1 -7 2 3 -90.1 -1/2 -1/2 -9/2 -7 2 -7 3 -90.1 -1/2 -9/2 -9/2 -7 2 3 -70.1 -1/2 -9/2 -7 -7 3 -70.2 -7 -7 -7 -7 3 -70.2 -7 -7 -7 -7 4 -70.2 -7 -7 -7 -2 4 -7 -7 -7 -7 -2 4 -7 -7 -7 -7 -2 4 -7 -7 -7 -7 -2 4 -7 -7 -7 -7 -2 4 -7 -7 -7 -7 -2 5 -7 -7 -7 -7 -2 7 -7 -7 -7 -7 -2 6 -7 -7 -7 -7 -7 </td <td></td> <td>8</td> <td>5. 27-</td> <td>: -34,8:</td> <td></td> <td>- 34.2</td> <td>-7. 5/-</td> <td>1. 7. 1 States</td> <td></td>		8	5. 27-	: -34,8:		- 34.2	-7. 5/-	1. 7. 1 States	
20 -42 , L -42 , L -42 , L -32 , R -53 , L -12 , R -12			-53 55				-31.6	7.	
27 -49.2 -49.2 -49.2 -49.2 -49.3 30 -90.1 -143.9 -90.1 -143.9 -49.2 35 -79.1 -143.9 -90.1 -143.0 -49.3 35 -79.1 -163.6 -79.1 -15.6 -47.3 35 -79.1 -10.6 -70.6 -70.6 -62.3 40 -70.6 -70.6 -70.6 -70.6 -62.4 40 -70.6 -70.6 -70.6 -70.6 -62.4 40 -70.6 -70.6 -70.6 70.6 -62.4 40 -70.6 -70.6 -70.6 70.6 70.7 40 -70.6 -70.6 -70.6 70.6 70.6 40 -70.6 -70.6 -70.6 70.6 70.7 160 Mass of zersis = 43.0 D3.8 r.1 µ384 20.6 70.7 17 Tabile 6 2000/BackcoorND LEVELS FUR RI x 1501 AirAr 200.6 70.6	- 		-42.6		- 42.6	8 .25 .		•	
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31 -79-7 -19-6 -79-1 -15-6 -20-6 40 -70-6 -70-6 -70-6 -43-0 -109-6 -66-9 40 -70-6 -70-6 -70-6 -43-0 -109-6 -66-9 40 -70-6 -70-6 -70-6 -70-6 -70-6 -66-9 41 -70-6 -70-6 -70-6 -70-6 -70-6 41 -70-6 -70-6 -70-6 -70-6 41 -70-7 -70-7 -70-7 -20-7 51 -70-7 -70-7 -70-7 -20-7 7 -70-7 -70-7 -70-7 -20-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7 -70-7 7 -70-7 -70-7 -70-7		30	4 •	- 143.9	-90.1	- 43.0	- 49 - 3		
40 -70.6 -70.6 -43.0 -103.4 -66.4 Flow Noise AT 25 xis = -43.0 DB. RF 1 yBAG 700.6		10	- 79 - 7	-169.6	- 52	-43.0	P	-	
Fiew Nase AT 25 K15 = -43.0 DB. RF 1 JUBAN FirmUSA SECRANG ANGLE 1 DBAN = 100 FT Table 6 20HO/BACKGROUND LEVELS FUR B' & 150' ARRAY 600 FT		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- 70.6	0_16/-		-43.0			2
From Nuse at 25 Ars = -43.0 DB. Re 1 JUBAR Armury Stermy Angle = 1 DSL DEPTH = 600 Fr Table 6. ECHO/BACKGROUND LEVELS FUR B' × 150' ARRAY		. 						-	
Frow Nove at RCKIS = -43.0 DB. RF. 1 JUBAT Armory Sterring Angle = 1 DSL DEPTH = 600 Fr Table 6. ECHO/BACKEROUND LEVELS FUR B' & 350' ARRAY							··· • • • • • • • • • • • • • • • • • •		.1800
Firmury Greching Angre = 1 Table 6 ECHO/BACKCROUND LEVELS FUR & 150' ARRAY	1	From Mar	1	-	Yb		THALET DEPTH		WI
Table 6. CHO/BACKGROUND LEVELS FUR 8' 150'	; 1 	Round Press	a Gravent Durie			4 10	DSL DEPIN		11
Table 6. ZCHO/BACKGROUND LEVELS FUR 2 150' ARRAV	1		and have a set of a			· · · ·		•	-2-
	2-	;;;	Table 6.	ZCHO/B		· · · · · ·	ARRAY	•	41(
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Echo BACKSROWID LUL	80		35.7	ر در د	17.6	24.2	12.4	14.2	16.5	16.9	8.8/	1. 6/	7.0	-23.5	-47.0	-46.3	-62.2	-66.4		-1-1 -	-112 FT	600 FT				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
Level	<u> 1</u>	•	51.8	32.5	24.3	16.7	9 -1	2.5	-3./	. 6 . 9 .	-12 5	-/6.7	-31.6	-13.6	-7/ . 6	-91.3	-105.2	109.4		··· ·	TARGET DEPTH	DSL DEPTH :	• •	ARRAY	i		! 	•	'n
Brgand hu	22	•	16.1	17.4	6.7	-7.5	E.E.	-11.9	- 19.6	-25-3	-31,3	-3126-	- 42 . 6	E10E-	-24.0	-43.0	-43.0	- 43,0						FOR 8' x 150'				:	
REVER	88		1. 21	17.4	6.7	- 7.5'	5.3	-11.9	-19.6	-25.3	-3106	-36.5	-53.0	-30.6	-24.0	- 27. 8	- 94 . 4	1.101-			×			LEVELS					•
DSL REVERS	23	•	9.40	17 .4	2.7.	-7.5	- 3 . 3		7 - 61-	- 22 - 3	-31.6	-36.5	-77 . 77-	- 93 . 9	-120.5	_	-122.3		· .		0 23. RE . 1 JUSH	= /0,	•••	ECHO/BACKGROIND			•	•	
Jurr. & B	REVERS DB		9.7	1.	1.	1.	-82.5	- 76 - 6		- 74 .5	7137-	7.07-	-53.1	-30 .6	- 24.0	- 27.8	4.48-	-10/-			FLow Norse AT 25 XIS = -43.0 DB. A.	AZIMUTH STEERING ANGLE = 10°	•	Table 7	•		· .	•	
Range	X1'05					2		7	• •			Ş	2 2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		30	31	40			FECH Ners	AZIMUTH		1		•			
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	Еснь/Вяскухоши) - Luz . Дд	35.9	1. 1. 1	19.4	50 50 10	-2.2	-2 8 . 7 :42 .6	-47-3 -62.2	-66.4	- 10 FT	- 600 Er	
	FCHO Lover	32.9	24.3	-3.1	-12.5	-35.5	-13.6	0. 99	1. 601-	TARLET DEPTH	DSL DEPTH	ARRAY
	Bryan h u	15.9	2.0/	-16.6	-13.4	6. h1-	-24.9	- 43.6	- 42 . 9	· · · · ·		FOR 81 x 1501
	Torn. Rever	15.9 16.8	-9.9	-16 cé -23 23	-13.4	-14 = 3 - 51 = 6	-24.9	-64.6	-57.6			BACKGROUND LEVELS FOR
	DSL REVERS	/5 . 5 16 . 8	10.2 -7.7 0.0	4 4 4	-30 • 0	-42.2	-129.6	-157.3				ECHO/
	Juzz & Borroy Revers bb	5.2	- 10 /	-69.9 -57.1	-11 e7. -13 ef	-14 23	-24.9	-64 00	-57.66		ALMUTH STEPRING ANGLE = 30°	Table 8.
	RANGE		<i>m z '</i>	~ ~ ~		0/	20	30	40		ALIMUTH -	
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	RANGE	JURE & BOTTON	DSL REVERS	TOTAL KENTR	BKGRID LA		A CARACTER STATE	
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		3.2	14.4	14.2	비.	5.02		
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	ر	-69.2	-9.5	-9.5	- 1			
	~	- 29 . 9	1 . 81-	0.81-	-/8.0		「「「「「「「」」」	
	•	-15.66	8. 42-	-15-1-	2	13		.
		-16.01	-31 .5	-18.0:	-19.0			
		/ //	-37 -8-	10 7/-	-16.1	-12.5		
			- 42 7	-14 -7	1.11	-16.5		+
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	Fron N	Frow Nerse Ar 25 xrs = -43.0 23		1894		K a	- / on Er	7P1
· · · · · · · · · · · · · · · · · · ·	RUMIT	ALMUTH STEERING ANGLE = 450	E = 450					1
•		•		· • • • • • • • • • • • • • • • • • • •	· · · · · ·			
2	1	Table 9.	1	ECHO/BACKGROUND LEVELS	FOR 8' ×	150' ARRAY	41.0	610
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Four Rouge Pants L.V.	CR CR		31.2	0 6 /	21.9	30.4	12.6	19.7	11.4	17.9	1.4	-0.4		-21.9	-41.2	-41.63	-12.2	-66.4		(P)	600 Fr	-4	100	•		· · ·	
Edito Isual	-	077	57.9	2.9	24.3	16.7	6,1	2.8	-3.1	-8.4	-12.5	-16.5	-31.6	-53.6	0.12-	- 86 : 3	-105.2	109.4	 	TARGET DEPTH .	- HIdol 750	••• ••	150' ARRAY	•		•	ł
Rurbustu	-12 042614	97	13.6	/3.9	2.5	-/3,7	-6.5	-15.9	-20,5-	-25.8	-17 . 9	-16.1	-41 .5	-27,7	- 29.8.	-43.0	-43.0	-43.0	•••			••• ••	FOR 8 ¹ x			•	
Torn Princes Runnan In	41 AL 115 1212	0	13.6	13.9	2,5	-13.7	-6.5	-15,9	-20.5	1	-17 - 9	-16 .1	-47.0	-27.9	-32.1	-65.57	-64,5	-19.2				•	ECHO/BACKGROUND LEVELS				
DCI RAUNE	ovar at	07	13 . 3	۱	2.5	-/3 . 7	0' //-	- 19.6	-26.3	-33 . 0	-39.3	-45°2	-74.2	-101.6	-129.2	-15-4.3	- / 90,0	-201.4	·	0 23 RE 1 1345	```				· · ·		
L'PE & POTTON	Jose + 1000 4		5.6	1.	1	1.	-8.4	-18.3	-21.9	-27.4	-17 . 9	-16.1	- 47 , 0	-27.8	-32.1	- 4505	-64.5	-59.2		FLOW NOISE AT 25 XTS = -43.0 23	ALIMUTH STEERING ANGLE = 90	•• •	Table 10.		•	••••••••••••••••••••••••••••••••••••••	1
Danto	- South	67/0				3		7	4	•	6	0	~	20	20	30	35	40			-						
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Ringt Terrer Dis. Remain	51. Review Torn. Review Review Lin. File		-	 				
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Kills Mar bb bb </th <th>Kills Rime bb b2 b3 b3 b3 b3 1 12 20.5 13.3 23.5 24.5</th> <th>Range</th> <th></th> <th>2</th> <th>TorAL REVERS</th> <th>דא אלצאוס צינד</th> <th></th> <th></th>	Kills Rime bb b2 b3 b3 b3 b3 1 12 20.5 13.3 23.5 24.5	Range		2	TorAL REVERS	דא אלצאוס צינד		
1 12.13 20.5 12.3 22.5 23.1 12.1 23.1 24.1 <	1 12.13 22.53 12.13 22.53 12.13 22.5 2 - - 12.1 12.1 12.1 12.1 23.1 2 - - 12.1 12.1 12.1 12.1 23.1 2 - - 12.1 12.1 12.1 12.1 12.1 1 - - - 12.1 12.1 12.1 12.1 1 - - - - - 12.1 12.1 1 - - - - - 12.1 12.1 1 - - - - - - 12.1 1 - - - - - - - 1 - - - - - - - 1 - - - - - - - 1 - - - - - - - 2 - - - - - - - 2 - - - - - - - 2 - - - <td< th=""><th><i>Kibs</i></th><th>Rine</th><th>80</th><th>29</th><th>84</th><th></th><th>4</th></td<>	<i>Kibs</i>	Rine	80	29	84		4
1 12.3 23.1 24.1 <t< td=""><td>1 71.4 70.5 73.5 74.5 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>аналана 1 страна 1 с</td></t<></td></t<>	1 71.4 70.5 73.5 74.5 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>аналана 1 страна 1 с</td></t<>							аналана 1 страна 1 с
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IC -33.5 -42.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -32.6 -42.6 -32.6 -42.6	If -53 i 5 -4/1 8 -53 i 2 -4/2 i 6 -7/2 i 7 -7/2 i 7 20 -4/2 i 6 -4/2 i 7 -4/2 i 0 -4/2 i 7 -4/2 i 7 -4/2 i 7 21 -4/2 i 7 -4/2 i 0 -4/2 i 0 -4/2 i 7 -4/2 i 7 -4/2 i 7 21 -9/2 i 1 -1/1 i 9 -9/2 i 1 -4/2 i 0 -4/2 i 7 -4/2 i 0 21 -9/2 i 1 -1/3 i 0 -4/3 i 0 -4/3 i 0 -4/3 i 0 -4/2 i 0 21 -1/2 i 1/2 i 1	2	-66.3	-31.9	. •	-34.2	-40.3	1
20 -42.4 -42.4 -42.4 -42.4 -42.4 31 -90.1 -117.9 -49.2 -42.0 -161.9 -161.7 32 -90.1 -113.9 -70.1 -43.0 -116.6 -161.1 31 -70.6 -70.1 -13.0 -116.6 -116.6 40 -70.6 -70.1 -13.0 -116.6 -116.6 40 -70.6 -70.6 -70.6 -72.6 -13.0 40 -70.6 -70.6 -70.6 -72.6 -143.0 40 -70.6 -70.6 -70.6 -72.6 -166.6 41 -70.6 -70.6 -70.6 -70.6 -166.6 42 -70.6 -70.6 -70.6 -70.6 -166.6 40 -70.6 -70.6 -70.6 -70.6 -166.6 41 -70.6 -70.6 -70.6 -70.6 51 -70.6 -70.6 -70.6 -70.6 51 -70.6 -70.6 -70.6 -70.6 51 -70.6 -70.6 -70.6 -70.6 51 -70.6 -70.6 -70.6 -70.6 51 -70.6 -70.6 -	20 -42.6 -91.2 -42.6 -32.8 -91.4 -57.6 26 -92.1 -17.6 -47.2 -47.2 -47.6 -45.6 36 -79.1 -193.9 -70.1 -43.0 -168.7 -166.6 36 -79.1 -123.6 -79.1 -43.0 -106.6 -106.6 40 -79.6 -79.6 -79.6 -72.6 -126.6 -106.6 40 -79.6 -70.6 -76.6 -12.6 -106.6 -106.6 40 -79.6 -76.6 -75.6 -43.0 -106.6 -106.6 40 -79.6 -76.6 -76.6 -43.0 -106.6 -106.6 40 -79.6 -76.6 -75.6 -12.6 -106.6 -106.6 $41000000000000000000000000000000000000$	بر بر	-53 ,5	-51.2-	4	- +2.6		-29.2
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30 -90.1 -113.9 -90.1 -113.6 -113.6 -114.6 31 -79.2 -123.6 -73.6 -114.6 -116.6 40 -70.6 -70.6 -70.6 -13.0 -117.6 -116.6 40 -70.6 -70.6 -70.6 -70.6 -117.6 -116.6 50 Muse AT 26 km3 = -43.0 DB AF 1 JuBA4 DS.1 DEPM - 306 ET 54 7 Timury Sreezming Huge = 1 DS.1 DEPM - 306 ET 54 7 Table 11. ECHO/BACKCROUND LEVELS FOR 8: ± 150! ARMAF 60 56	30 -90.1 -143.0 -43.0 -486.1 -101.0 31 -79.7 -169.6 -79.6 -79.6 -101.0 40 -70.6 -79.6 -79.6 -13.0 -101.6 -101.6 40 -70.6 -70.6 -79.6 -79.6 -101.6 -101.6 40 -70.6 -70.6 -70.6 -70.6 -101.6 -101.6 74 -70.6 -70.6 -70.6 -70.6 -70.6 -101.6 75 -70.6 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 75 -70.6 -70.6 -70.6 -70.6 7 -70.6 -70.6 -70.6 -70.6 7 -70.6 -70.6 -70.6 -70.6 7 -70.6 -70.6 -70.6 -70.6 <	210	- 49 . 2	-117.9		- 42.2	- 108. 9	
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Yew Nuse AT RY RTS = -43.0 DB AF 1 JBAF Atimutal Stetaning Angle = 1 DSA DEPH = 200 FT Table 11. BCHO/BACKCROUND I EVELS FOR 8 = # 150! ARGAT	Tow Nuse AT REATS = -43.0 DB AF 1 JUBAN ATIMUTH STEERMY ANGLE = 1 DEPIN = 20 ET DSL DEPTN = 600 ET Table 11. ECHO/BACKCROUND I. EVERS FOR 81 # 1501 ARBAT = 600 ET	- a	- 70,6	-181-	- 70 . 6	-43,0	-10.6	-114.6
Flow Nuse AT 25 KTS = -43.0 28 AF 1 JUBAR ATIMUTY STEERING ANGLE = 1 DSL DEPTH = 600 FT Table 11 BCHO/BACKCROUND LEVELS FOR 81 = 1501 ARGAT	Fundruse AT 25 x13 = -43.0 DB AF 1 JUBAR Atimutri Stechnig Angle = 1 Table 11. BCHO/BACKCBOUND I BYERS FOR 8 = 150! ARRAY = 600 FT Table 11. BCHO/BACKCBOUND I BYERS FOR 8 = 150! ARRAY			•			N	
From Nuse AT 25 XIS = -43.0 28 AF 1 JUBAN ATIMUTH STEERING ANGLE = 1 DEPTH = 600 ET Table 11. ECHO/BACKCROUND I. EVELS FOR 81 # 150' ARRAY = 600 ET	Flow Nuse AT 25 KIS = -43.0 28 Ar 1 JARA I JARA I TARIET DEPTH = 20 ET ATIMUTH STEERING ANGLE = 1 - 354 Arguit = 20 ET ATIMUTH STEERING ANGLE = 150 ARGAT = 600 ET Table 11 - BCHO/BACKCBOUND LEVELS FICK 81 = 150 ARGAT				1	11 ar	·· []	•••
Armury Stermy Angle -1. DSHO/BACKCROUND LEVELS FOR 8: = 150! ARRAY : 600 Fr Table 11. BCHO/BACKCROUND LEVELS FOR 8: = 150! ARRAY	ATIMUTH STECKING ANGLE DSL DEPTH - 600 Fr Table 11. ECHO/BACKCROUND LEVELS FOR 81 * 150' ARRAY	FLOW NA		201	X	н.) . ET
		AIMUTI	N STEEPING ANGLE	•	· · · · · · · · · · · · · · · · · · ·	·		
Table 11. ECHO/EACKGROUND LEVELS FOR 81 * 150 FOR 810 FOR 81 * 150 FOR 81 * 150 FOR 81 * 150 FOR 81 * 150 FOR				•••• ••• •••	• • • •			
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					,	- - - - - -		

Range	1 JURE & BOTTON	DSL REVERS	TOTAL REVER	Brgand ha	ECHO LEWEL	ECHO/BACKEROWN LUZ .
X/DS		22	28	22	23	22
<u> </u>						
	9.7	9.41	16.1	16.1	57.8	31 . 7
		17.4	17.4	p. Li	32.9	15.5
"	1.	2.7	6.7	6.7		7.8
	1.	-7.5	- 7.5	-7.5	0.8	ア・ア
	-82 .5	. 3	5.5	E .	-3.7	1.0-
~		-11.9	-11.9	-11.9	-11 . 8	1.0
	L - 7	7.61-		-19.6	-19.4	0.1
	- 74 .5	52.3	-25.3	-21-3	-26.6	-1 .3
6		-31.6	-3106	E'18-	-33.5	-2.2
9	-60.6	-36.5	ا كرويكي.	-3166	-40.3	-4.7
~	-23.1	1 - 66 . 5-	-33.0	-42.6	-71.9	- 29.2
20	-30 .6		2.02-	-3013	- 131.2	-61.01
26		-120.5	-21.0	-24 0	-101.9	- 6d. 9 - ·
30	-87.8	-146.6	- 27.8	-43.0	-124.6	
<u>]</u>	- 84.4	-172.3	4.42-	-43.0	-143.0	-100.0
40	4		-101-	- 43.0	7.65/-	-16.6
. 			•		4 * * * *	•
FLOW NOISE	loise AT 25 X75 = -43.0	.0 23 AF 1 434		• • •	TARLET DEPTH	- 3th FT
Azim		- /o		•	DSL. DEPTH	600 FT
-		•		· • • •	· · · ·	• •
2-4	Table 12	ECHO/B	ACKGROUND LEVELS.	FOR 8' x 150'	I ARRAY	410
9				•	•	<u>)</u> U(
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Rauge Jore & Boroy DSL Reveals 7 Kluss Revea bb DB DB DB 1 5.2 16.6 2 - 79.6 - 9.0 1 - 5.2 16.6 2 - 10.2 2 - 10.2 2 - 10.6 2 - 10.2 2 - 10.2 2 - 10.2 2 - 10.2 2 - 10.2 2 - 10.2 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.7 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.6 2 - 12.7 2 - 12.7 2 - 12.6 2 - 1		REVER BRGRND LAL ECHO LEVEL ECHO/BA	<u>98</u> <u>28</u> <u>28</u>	15.9 15.6 57.9 45.8	9 16.9 32.9 16.	2 10.2 14.5	.9.9	2. h 7. E. 0. 8. 0. 8.	9. 4. 4	-23,3 -23,3 -19,4 3,9	-11 .7 -26.6 -14 .9	-13.4 -13.4 -13.5 -20.1	• 3 ·/4 ⋅3	-11.6 -51.0 -71.8 -20.8	-24.9 -24.9 -91.4 -66.5	- 29 29 - 0 - 108.9 29 .9 .9	-64.6 -43.6 -126.6 -53.1	- 13.3 -1/3.0 -1/43.6 -100.0	-57.6 -42.9 -159.6 116.7			TARGET DEPTH - 3 th FT		ECHO/BACKGROUND LEVELS FOR 8" x 150" ARRAYS	
Surres Barroy Revers bb Arros bb 5.2 5.2 5.2 -10 -10 -10 -10 -10 -10 -10 -10 -10 -10		Reverte	28		4.		4 4	•	· •	•	•		-42		-99.6	-129.6	. •		- 202.4	•	· ••• •		= 30°	Ι.	
	· ·! ·	Botton		6.3		- [·	~ ~ ~	7.62 -	- 6.9.	-57.1	-11 . 1:	-13 .4	E #/-	1	-24.9	-29.1	-64.0	-63 + 2	59.66			E AT 25 K15 = -43.	STEEPING ANGLE	Table 1	•

Echo Baaks Rown Luc.			37.1	17.6	5.01			6. X	0 0	d	78	9. 22.	-65,0	-74 . 5	- 1	-/00, 6	-1110.4				2 6 00 1		1 /OC)6			
EAUS LOVEL		• • •	51.9	32.9	14.5	0.0	3.7		-19.4	-26.6	-35.0	- 7/ 9		- 101.9	1.12-	- 143.0	-159.6			S.,	DSL DEPTH	, n , 		150' ARRAY	•	•	• ,
a I Anani G	BKGKNO NIL	94	14.7	15.3	4.0	-11.2	-9:5-	0.8/-	1	00 8/-	-/6 ./	12 0	-26.4	-30.4	0° EH-	-43.0	-43.0				· · · · · · · · · · · · · · · · · · ·	au		FOR 8' X	•		
2.0	JOTAL KEVEK	07	14.7	15.3	¢, 0	4 4	-3.5-	-18.0	-15-1	- 0 - 8/-	-1/ 1/-	1 - 14 -	4 10-	- 20 - 7	-14 4	- 63 . 7	-58,3		•	13.45		· · • • ·		ECHO/ BACKGROUND. LEVELS	· · · · · · · · · · · · · · · · · · ·	;	*
	ENER8	28	14.4	15.3			-9.5	-18 . 1	8. 42-	- 31 .5.	-27-9-	43 . 7	1 2/	+ 10/-	9.511		- 203.9		 •••	``				t			
	Barton	RUVERS DA		1	• \	- 1	- 65		-15-6	10.8/-	10 3/-	<u>-14 - 7</u>	-11.07	4	-30 . 1 .	4	-5-9-3	1		SE AT 25 Kr5 = - 43.0 28 AB				Table 14.		• •	
	Range	Sairs				£ .					0	0,		20	2,	30	35			From NersE	ALMUTH		2	-51	1		

1.000 mg

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RANGO	Jure & Borroy.	DSL REVERS	Forme Revers	BIGRAD LIL	FCHO LEVEL	EcHo/BACKGROUN LUL .
2012		28	28	89	20	<u>86</u>
		•				
	2.2	13,3	13.6	13.6	51.9	31.3
	1.		13.9	•	32.9	0.6/
	1		2.5	2.5	14:5	12.0
*	1-	-/3.7	-13.7	-13.7	0.8	31.7
	-8.4	-1/ .0	-6.5		-3.7	
	-19.3	2.91-	-15.9	- 1,- , 9 .	-11 - 8	
-	-21.9	-26.3	-20,02-	-20.5	-13.4	and the second sec
•	•	-33 . 0	-25.8	-25-8	-26.6	5.0-
0	-17 - 9		-17 . 9	-17 . 9	-33.5	7.1.
9	•	1 7	1 - 9/-		-40.3	E.15-
~	-47.0		-47.0	-41 .5	-71.8	-30.5
20	-27.8	7.101-	-27.8	-27.7	15-	
26	-32,1	-128.2	-321/	- 29.8	-6.101-	-79.1
30	-65.5	-154.3	-65.57	-43.0	1.721-	- 43.1
35	-64.5	- / 80.0	-64.5	-43.0	- 143.0	-100.
40	-59.2	-201.4	-79.2	-43.0	-159.6	-16.6
		•	• • •	•••	•	
FLOW Na.	FLOW Nass Ar 25 475 = -43.0 28	10 28 RE 1 434	44	• • • • •	TARGET DEPTH	F1
AZIMOTH	ALIMOTH STEERING ANGLE =	` •	-1- 		1.00	6.00 Fr
		· ·· ·	· · · ·		•	
2-	Table 15.	ECHO/	BACKGROUND LEVELS	FOR 8' x 150'	0' ARRAY	
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
12.2 12.2 12.3 31.1 34.2 -6.3 -6.3 31.1 12.1 44.4 11.1 19.9 31.1 12.1 12.1 -2.1 23.2 31.1 44.4 -2.1 -2.1 23.2 31.1 47.4 -2.1 -2.1 23.2 24.4 40.4 -2.5 -32.5 -32.5 31.4 47.4 -2.5 -47.0 -3.1 24.8 40.4 -2.5 -47.0 -3.1 25.4 40.4 -16.2 -47.0 -3.1 25.4 -1.4 -25.5 -47.2 -3.1 25.5 -1.4 -47.0 -1.5 -1.4 47.4 -16.1 -47.0 -1.5 41.2 -17.1 -47.0 -1.4 -1.4 -76.1 -47.0 -1.4 -1.4 -77.1 -47.0 -1.4 -1.4 -77.1 -47.2 -1.4 -1.4 -77.1 -47.2 -1.4 -1.4 -77.1 -47.0 -1.4 -1.4 -77.1 -47.0 -1.4 -1.4 -77.1 -47.0 -1.4 -77.1
12, 2 $72, 2$ $16, 4$ $34, 3$ $-2, 3$ $31, 1$ $49, 4$ $49, 4$ $11, 12$ $19, 9$ $31, 0$ $31, 0$ $11, 12$ $19, 9$ $31, 0$ $31, 0$ $11, 12$ $19, 9$ $31, 0$ $31, 0$ $11, 12$ $19, 9$ $31, 0$ $31, 0$ $-2, 1$ $23, 1$ $23, 1$ $40, 1$ $-2, 1$ $23, 1$ $24, 1$ $40, 1$ $-32, 5$ $-32, 2$ $-32, 2$ $41, 1$ $41, 1$ $-32, 5$ $-32, 3$ $24, 1$ $40, 2$ $24, 2$ $-32, 5$ $-32, 2$ $-32, 2$ $-31, 2$ $31, 3$ $-53, 7$ $-42, 0$ $-23, 1$ $24, 3$ $24, 3$ $-42, 1$ $-72, 2$ $-14, 3$ $-14, 3$ $-14, 3$ $-70, 1$ $-42, 0$ $-12, 0$ $-12, 0$ $-14, 3$ $-70, 1$ $-10, 1$ $-10, 1$ $-12, 0$ $-14, 3$ $-70, 1$ $-10, 1$ $-10, 1$ $-12, 0$ $-14, 3$ $-70, 1$
-6.3 38.1 49.4 18.2 13.2 30.9 12.1 11.1 -7.1 19.9 31.0 -2.1 -2.1 49.4 40.6 -32.5 -32.3 8.4 40.6 -32.5 -32.3 8.4 40.6 -32.5 -32.3 8.4 40.6 -32.5 -32.3 8.4 40.6 -32.5 -47.0 41. 47.1 -58.9 -47.0 -1.5 31.5 -58.7 -47.0 -7.5 31.5 -51.5 -47.0 -1.5 31.5 -52.8 -47.2 -27.3 24.5 -71.5 -47.0 -1.5 17.8 -72.5 -47.0 -1.5 -1.4 -73.5 -47.0 -1.5 -1.4 -73.5 -47.0 -1.5 -1.4 -73.5 -47.0 -1.4 -1.4 -73.5 -72.3 -72.3 -1.4 -73.5 -72.3 -72.4 -1.4 -73.5 -72.3 -72.4 -1.4 -73.5 -72.3 -72.5 -1.4 -73.5 -72.3 -72.5 -1.4 -73.5 </td
18.2 19.2 30.9 12.1 1. 1. 1. 1. 19.9 39.0 2.1 -2.1 19.9 39.0 -2.1 -2.1 19.9 14.9 -2.1 -3.0 0.0 41.4 47.1 -76.1 -43.0 -15.0 41.4 47.1 -76.1 -43.0 -15.0 41.4 47.1 -63.7 -43.0 -15.0 41.4 47.6 -63.7 -43.0 -15.0 -17.9 -93.0 -102.6 -59.11 - 15.0 -16.1 -43.0 -102.6 -59.11 - 15.0 -16.1 -43.0 -102.6 -59.11 - 15.0 -16.1 -43.0 -102.6 -56.7 4 -16.1 -40.0 -16.1 -17.0
11 11.1 19.9 31.0 -2.1 -2.1 5.4 40.4 -3.1 -2.1 5.4 40.4 -76 -1 47.4 47.4 -76 -1 -2.5 2.1 5.4 -76 -1 -43.0 -1.4 47.4 -63 -43.0 -3.7 34.5 34.5 -63 -43.0 -7.5 -1.5 34.5 -13 -7.5 -7.5 -1.4 -13 -1.5 -1.5 -1.5 -73 -1.3 -21.2 -7.5 -73 -1.2 -7.5 -7.4 -73 -1.2 -7.5 -7.4 -73 -1.2 -7.5 -7.4 -73 -1.2 -7.5 -7.4 -73 -1.2 -7.5 -7.4 -73 -1.3 -7.2 -7.4 -73 -1.3 -7.2 -7.4 -73 -1.3 -7.2 -7.4 -73 -7.5 -7.4 -7.5 -73 -7.5 -7.5 -7.5 -73 -7.5 -7.5 -7.5 -7.5 -7.5 -7.5 -
-2.1 -2.1 13.8 14.9 -32.5 -32.3 1.1 -76.1 -47.0 1.1 -68.9 -43.0 0.0 -68.9 -43.0 0.0 -63.7 -47.0 -12.5 39.3 -63.7 -47.0 -7.5 39.3 -17.9 -17.9 -17.9 -9.9.2 -17.9 -17.9 -9.13.0 -102.6 -59.11 - 16.0 -16.1 -47.0 -102.6 -59.11 - 16.0 -17.9 -47.0 -102.6 -59.11 - 16.0 -16.1 -47.0 -102.6 -59.11 - 16.0 -16.1 -47.0 -102.6 -59.11 - 12.00 FT Tanager Deprin - 20 FT Derrit - 12.0 FT
-76 -1 -43.0 4.1 4.1 40 -6 -76 -1 -43.0 0.0 4.1 41.1 47.1 -63.7 -43.0 0.0 43.0 43.0 -63.7 -43.0 -3.7 34.6 -63.7 -43.0 -7.6 -1.6 -49.8 -1.6 -9.9 -1.6 -1.6 -1.7 -43.0 -102.6 -6 -1.6 -63.0 -102.6 -6 -1.6 -63.0 -102.6 -6 -1.6 -63.0 -102.6 -7 80 67 Tagger berru = 20 67 -1.6 -63.0 -102.6 -7 80 67 Tagger berru = 20 67
-76 1 -43.0 41 41 47.1 -8. 8 -43.0 0.0 41 41.0 -63.7 -43.0 3.1 5.1 -1.1.2 -42.1 -1.5 -9.1 -1.5 -1.5 -9.2 -42.1 -1.7 -9.2 -42.1 -1.7 -9.2 -42.0 -102.6 -5 -13.0 -12.9 -12.9 -13.0 -12.9 -12.9 -13.0 -12.9 -12.9 -13.0 -12.9 -12.9 -13.0 -12.9 -12.9 -14.1 20 -15 -15.1 -43.0 -102.6 -5 -17.1 -17.0 -
-68. 9 -43.0 0.0 415.0 -63.7 -47.0 -3.7 31.4 -1.1 - 31.6 -1.2 -47.0 -1.5 31.4 -1.2 -47.0 -1.5 -1.4 -1.2 -9.5 -1.4 -1.2 -1.2 -47.0 -12.6 -1.2 -12.0 -12.6 -29.4 -1.1 -43.0 -102.6 -29.11 = 20 FT DSL DETTH = 20 FT
-63-7 -4/3.0 -3.7 -63-3 -6(-3 -4/2.0 -7.5 -1.5 -1.5 -25.9 -4/1.2 -1.5
-66. 3 -47.0 -7 5 36.5 -53.5 -47.7 -88.1 17.9 -42.6 -37.8 -11.2 -1.7 -42.6 -12.9 -14.8 -14.8 -14.8 -12.9 -12.9 -14.8 -14.8 -17.0 -13.0 -12.6 -59.4 -14.8 -17.0 -13.0 -12.6 -59.4 -14.8 -17.0 FT -10.6 -17.0 FT -10.6 -17.0 FT -10.6 -17.0 FT -10.6 -17.0 FT -10.6 FT
-53.5 -47.7 -8.8 17.9 -47.6 -39.9 -47.2 -1.1 -9.7 -43.0 -12.9 -14.5 -7.7 -43.0 -12.9 -14.5 -7.7 -43.0 -102.6 -59.11 - 29.5 -7.9 -17.0 -17.0 -17.0 -17.0 -17.0 -102.6 -57.11 - 20 FT -7.9 -17.0 FT -7.9 -17.0 FT -7.9 -17.0 FT
-42.6 -39.8 -41.2 -1.4 -49.2 -48.1 -57.1 -15.0 -50.1 -43.0 -12.3 -29.5 -73.7 -43.0 -12.5 -29.5 -73.7 -43.0 -12.5 -29.5 -74.5 -73.0 -12.5 -59.11 - 29.5 -59.6 -59.5 -59.6 -59.5 -59.6 -59.5 -59.6 -59.5
-49.2 -48.1 -13.0 -90.1 -43.0 -12.3 -19.3 -13.0 -13.0 -14.3 -14.3 -10.6 -43.0 -102.6 -59.4 -10.6 -59.4 - 1200 FT DSL DEPTH = 20 FT
-90-1 -43.0 -12.3 -19.3 -73.7 -43.0 -12.3 -14.5 -73.0 -102.6 -59.4 -79.5 -12.0 -59.4 -79.5 -12.0 FT -79.5 -12.0 FT
-73.7 -43.0 -97.8 -44.5 -10.6 -43.0 -102.6 -59.4 - -59.6 -59.7 -59.7 - 59.6 -5 -551.54 - 1200 FT
-70.6 -43.0 -102.6 -59.6 -59.6 -59.6 -59.10 FT TARGET DEPTH = 80 FT DSL DETTH = 1200 FT
THREET DEPTH - 80 FT DSL DETEN - 1200 FT
TARGET DEPTH = 80 FT DSL DEFTH = 1200 FT

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Kone/Ruckstrouit Lor	1.75	8.8/	k • 11	6. 11	42.2	43.0	39.3	36.5	12.9	8. 0/-	1.85-	6, 95.	. 4 4 . 8	-59 .6		60 57	: 1200 Fr		
ECNO Krist	46.4	30.9	6.51	13.8		0,0	-3.7	- 7 .5	-20,8	- 2017-	1.12-	- 22.3	- 97.1	7. 201-		TARGET DEPTH.	DSL DEPUT	150' ARRAY	•
Prosents ha	9.7	12.1	ه بر		-33 8	0.54.	.45,0	-42,0	-42.6	-30.1	-24.6-	v · 2/2-	.43,0	0.5%		•		FOR 8' x 150	·
Torna Carta	9.7	17.1	۲،۲		- 34,4	74.5	-16 .6	-60.6	-3.1	-20,6	-24.0	0.72.	- 84.4	1 . 101-		44.		SIZVAL	
DSL Rowing	-34.7	17.1	~~ 0	-1.5-	-34,4	•] •	1•].	1 -	1-	1-	1-	1-			OD RC INERS	0	ECHO/BACKGROUND	
Joir & Borrey	9.7		- 1-	-82.5	- 1, 1/-	- 74 . 50	-26.6	-60.6	1.624-	-30.6	-2:/.0	\$ 2 4 -	4.49.	1. 21.		Fiow Norse AT 25 K15 = -12.0 0	ALINEN STEERING PAUL	Table 17.	•
RANG		~ ~	/	~	,	0	0	¢(~	20	3,0	30	35			FLOW NO.	America	i	
	· · · ·	. · · ·	•	•		,												2-5 4	

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•				-14					43	WP11-2-4	100
ECHO/PHICKSROWS LUL	39.1 27.3	11.3	23.2	16.9	9.7	17.6	-16.3		- 19 . 9	- 80 ET	
E'CLIO LOVEL	46.9 38.1	20 19	13.8	4.1	-3.7	8-12-	41.2	-12.3	-92.8	792455 DERIN . 80	VADAV 1501 -
Bryano Lu	7.3	12.7	2.5.	-1/2 . 8	-12 .1	11 - 17 -	9.02-		P. 61/-		
Torrie Revis Breans Lu	7.3	12 . 7	-9.1	1.12-	-12-01	-51 .	20.62.	-7 4 -			A CURRENTIAL I THING A CURRENT A
DSL REVENS	8.01		-9.4]-1.	1 - 1	- !\				0 00 AS 1 1000	Unua
RANGE Suger & Berrout	5.2		5-67-	-1.2.1	-13.4		6.12.		-63.2	From Neve Nr 25 Krs = -43.0 23 A	Tahla 18
Ranse		ci, 24	V .	2	6		20	30		Fron News Row 15%	

		1	-		, ;							• ;		ł			1	•		
	Ferto Lover Fello/BACKFROWS Lov.	40.0	29.4	15.5	17.3	37.9	i9.2		12.4		79.2	-14.8	-26.6	- 29.3	44.8	-59.6		· 80 ET	1200 Fr	2-41006
•	ECHO LOVEL	46.4	38.1	30.9	19.9	13.8	4.	0.0	-3.7	-7.5	-24.5	-41.2	122-	- 72 13	- 8 2 8 -	7. 201-		TARLET DEPTH	DSL DEPIN	150' ARRAY
	Brysna hu	6.4	9.7	11.4	2.6	-79.5	-12.1	1-21-	-16.1	-14.7	-43.0	1.26.4	-30 .5	-43,0	-43,0	- 43,0	· · · · · · · · · · · · · · · · · · ·	:		FOR 8' X
•	Torn Revers	6.4	9.7	11 .4	عاد	- 29.9	1 -11-	1 . 81-	-16-01	-14 -7	-61.2	-26.4	- 30 - 7	-64.1	- 63.7	5.8.		₽1,	-	ECHO/BACKGROUND LEVELS
	DSL REVERS	3.0	9.7	11.4	2.5	-40.5	}•]•	,]•]•	1.	1.	1-	1-	1-	1.		ODB AF I HERE		
· • • •	RANGE JURF. & BOTTON KIDS RELEA	3.7	-	1-		24.2	20-11-	- 18 .1	-16.1	-/4 . 7	- (1 . 7 .	- 2604	-30.7	-(. 1, 1)	- 63, 7	-59.3		FLON NOVSE AT 25 XTS = -43.0 DB	ARMOUTH STEEPING ANGUE = 450	Table 19.
	Range		~	3	4		7	1	9	0/	7	20	21	30	ر بر "	43		FZON No.	ALINGTH	•
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9.8 30.4 21 1.2 1.2 1.2 1.2 -7.2 -9.9 30.4 21.9 -7.2 -9.9 19.8 20.2 -7.9 -7.2 9.4 26.2 -7.9 -7.2 9.4 26.2 -7.2 -7.2 9.4 26.2 -7.2 -7.2 -7.2 21.2 -7.7 -7.7 -3.2 21.2 -17.9 -7.2 -3.2 21.2 -17.9 -7.2 -3.2 21.2 -7.7 -7.2 -27.2 21.2 -7.2 -7.2 -27.2 -27.2 -7.2 -7.2 -27.2 -27.2 -7.2 -7.2 -27.2 -27.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 -7.2 $-7.$
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-21-9 -21.9 4.1 26. -22.4 -27.3 0.0 27. -27.6 -3.7 14. -16.1 -16.1 -7.6 9.16. -47.0 -41.5 -34.9 16. -47.0 -41.5 -34.9 16. -27.8 -41.2 -13. -27.8 -41.2 -13. -27.8 -41.2 -13. -27.8 -41.0 -12.6 -59.
-12.9 -72.5 -3.7 14. -12.9 -72.5 -3.7 14. -12.0 -41.5 -34.9 16. -27.8 -41.2 -73.6 -74.2 -73. -22.8 -43.0 -71.2 -73.6 -79.6 -59.6
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-27.5 -24.9 16. -27.5 -27.8 -41.2 -73.6 -32.1 -31.5 -41.2 -73.6 -65.5 -43.0 -57.4 -44.4 -61.5 -43.0 -121.6 -59.4
-32.1 -31.5 -57.1 -3.5 -65.5 -43.0 -22.3 29. -61.5 -43.0 -17.8 -444. -73.2 -43.0 -102.6 -59.
-61 -43.0 -22.5 29. -61 - 43.0 -12.5 29. -61 - 53.0 -12.6 -59.
-64, 5 -43,0 -87.8 -44.

			<u>.</u>			•		<u>!</u>	; 					WP	11-2	-4100
FCHO LEVER FCHO/BACKGROWIS LUL	39.6	37.5	27.8	31 0	46.0	5/10	26 .5	7.1	. 5/-	-28.9	- 45.3	7.22.	-66.4	12 61	1200 Fr	
FCHO LOVER	\$1.9	24.3	16.7	2.6		7.8.		-356-	7.85.	0.12-	- 22 . 3	-105.2	-10 2.4	Trager Derril .	DSL DEPTH :)' ARRAY
Bryan Lu DR	12.2 -1. 2	18.2	1.2.	-38.2	-43.0	0.54.	. 42. 0	-42.7	- 39. 4	18.01	-43.0	-42.0	0.54.		 	FOR 8' x 150'
Torne Rever Bugar In	12.2	12.2	1.1.	-32,5	- 1/ 1/-	1.3.7	-66 . 3	-5:30.5-	-42.2	- 49 - 2	1-05-	- 19	-101-			O/BACKGROUND LEVELS FOR 8'
DSL Revers	-55,00	18.2	11 11	-32 .5	1-1	• •	1.		1		1.			DE RE I JERG	0/ #	ECH
KANGE JUCE & BOITON	12.2	1	- 51 - 8	- 28 . 7	-76.0	-63.2	6077-	-13,5-	-420%	-12.2	-50.01	- 79 1	7	FLOW AL . S.C. AT 25 X15 = -43.0 28	Annors Sectory May -	Table 21.
KANIS	. ~	6,	* ~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	20	. 0	9	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	20	5	30	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>,</u>	FLOW N. S.	HINGOR	
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Lu2 .							•				•					N	P11	-2-4	1006
Echo/BAckgRours	1.24	12.6	2.8		2. 7×	29 . 9	34 . 6	20.5	26.5	7.0	- 23.2	-47.0	-463	-62.2	1-11-		150 65	1200 65	
ECHO LOWEL	8.12	32.9	24.3	/6.7	8.7	-3./	1 - 8 -	-12.5	5.21-	-36.6	-22.52-	- 2/ -0	-99 .2	-10/2	1. 601-			JSK DEPTH =	' ARRAY
BKGRND! NL DR	-	14.3	12.1		-33 , 8	0 2 /5	-43.0	-43.0	-43.0	-42.6	-30.4	-24 . 0	-43 .0	0.24.	0.11.				FOR 8' x 150'
Torn. Revera Brigand.	9.7	/// 43	17.1		-34.4	- 74 . 7	-74 .5	7077-	-60.6	-3.1	-30.6	-24.0	9.28-	- 81 . 4	1 . 101-		et a	•	ECHO/BACKGROUND LEVELS FOR
DSL REVENS	4	50 4/	1.2.1		- 34 4	•	1-		}	1	1.	1-	19				DE RE INERS		.•
Juger & BOTTON			1- 1	- 82 -	7.71-	- 74.7	-24 .5	-66.6	-60.1.	1.52-	-30.6	-21/0	8.28-	· 24 4 4	1 1 1 1 1 1 .		From Nerse AT 25 X75 = -43.0 28	Pris.	Table 22.
RANGE			6		 	-	-	6	q	~	20	35	30	36	de de		Frow Ners.	Hermon	
	 - 	: • • •			, 		•	. .		•••	•	-		-	ſ	•			2-59

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•		ECHO LEVEL ECHO/BACKGROWN LUL.	44.5	22.1	1. 1	12.6	19.5	40.3	39.7	ĉ, ŝ	• • •	- 2.5		-29.7	-42.2		- (1 -)-	P. 77-		Fr	د	410	06
÷	•	ECHO LEVEL Dis	57.6	32.9	Erpe	16.7	9 . 1	2.2	-3.1	-2.4	-12"	-16.5	372-	- 13.6	-71.0	- 88 . 3	-105.2	-109.4	:	TARGET DEPTH . 150	DSL DEPTH = 1200		P ARRAY
•		Brysna hu	7.3	10.8	12.7	4.1	4.9.	-37 .5-	-42.8	-// .7	-13.4	-14.3	42.4	8 62.	-28 . 8	0.2%.	-25 0	- 12.					FOR 8' x 150'
•	•	Torne Rewes Brganb hu DB DR	7.3	10.9	12.7	4.1	-9.4	-39.0	-17.1	-11 - 7	-13 04	-14 .3	-21.2-	-24.9	0.62.	-64.0	-63 22	-52.6	•	7 %	-		ECHO/BACKGROUND LEVELS FOR 8'
		DSL R.FUER	3.3	8.01	12.7	4.1	-9.4	-39.0	J	1-	1-]•	• -	1-	1-	1	1-	1	•	ODB RE INERS			
•		Jure & Roman	5.2	1.			- 79.6	- 69.9	-52.1	- 11 . 7	-13 .4	-14 .3	-57.06	9.12.	1.62-	-6400	-63.2	-5726	- .	1100 Nevsr Ar 25 Krs = -13.0 08	in Sickany Augur = 30°		Table 23.
	• • • • •	Sand		~	3	*	J	7	7		9	01),	20	21	30	35			10: Ner	142 - 174	1 • •	
1					-		· ·	•					•		-					-	-	2-	60

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Ecro/Backgrowb La	41.4	23.2	12.9		\$2.3	12.0	6		2.6	-27.8	- 40.1	- 467	- 62. 2	-66.4	150 ET 1200 ET
ECNO LIVEL	51.12	32.9	26.3	1.6	2.2	-3.1	- 8 - 9		-326-	-22.6	0.11.	- 89.3	-105.2	-1001-	Тадег Дерги . ДSL Дерги .
RYGAND L 12 DR	6.4	2.2	2.6	./0.	-25-52	7157-	-14.1	-14.7	-42.0	1.26.4	-30 2	-43.0	-45,0	.43.0	
Toras Revies Brgand Lu. 28 23	6.4	9.1	2.6	70 0/-	- 29,9	-15 0	1	-14 .7	-61.7	-26.4	-30 -7	1.42-	: 63.2	- 58 - 2	150 1 JUBAR
DSL Reread	5.0	2.6	2.6	-10.6	-40.5	•		1	10		1-	1-		24	- 450 1 JEAS
RANGE JURF. & BOTTON ANDS ROUTIN DE	3.7			-69.2	-29.9	- 10 -	1091-	-14 . 7	- (1 - 7	-2604	-30.2	-64.4	- 63. 7	-510.3	FLE: Noise AT REKIS = - 43.0 DB R Arniver Stecking Anger = 450
Rauge		~ ~	4	4	7		6	9	4	20	26	30		47	Fee Noise Anniven

			· . 								WP11-2	4100
FCIIO LOTVEL FCHO/BACKGROWID LVL	46.9	14 - 5	21 .1		×	6 , <i>1</i> , 1 ,	- 27.8	- 4/ 2	7, 22-	-cc. v	150 ET 1200 ET	
ECIIO KOVEL	2.12	24.3	2.2	1.8-	J. 31-	- 37.6	3. 27-	. 12 .	.c. 201-	-109 . 4	Такцег Дерги . Дек Дерги :	150' ARRAY
Brgand Lu	5,0 9,4	9,9	6.2.	-37.3	-17.9	.41.5	27.8	-42,0	-42.0	-43+0		8' X
Torne Revers Brgans Lu 28 23	5.0	9.8	-19.3	-27.4	-12 -9-	-42,0	-32.6	-65.05	-64.5	- 19.2	5 -	ECHO/BACKGROUND LEVELS FOR
DSL REVENS	2,0	9.8	-12.4	• •	1 1	17	1- 1-	1-		1.4	2 2 2 2 2 1 1 12 17 1	
Sure & Borrory Rayers	2.2	1. 1.	-19.3	-22.4	-16.1	-47.0	-21.8 -36.1	-6565	-44.5	.2125.	Frow Noise Ar 25 Kis = -42.0 23 . Armony Greening Mugue = 90°	Table 25.
RANG.	1 7	4 3		1 -	6	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	20	30	31	4	From Nois	· · · ·
- ,		•				*	· · · · · · · · · · · · · · · · · · ·					2-62

-55.0 12.2 -55.0 12.2 18.2 18.2 11.1 11.1 11.1 12.1 12.2 -2.1 -2.2 -		RANGE	KANGE JURF. & BOTTOM	DSL REVERS	Tarne Rever Bugand Lu DB DB	Bregarb 4 ru DB	ECHO KOVEL	Layo/Background LV2 . DB	<u> </u>
i i	ير عادر	Salu				•••	۰ ۱۱	а 1 1 1 1	
i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i <td></td> <td></td> <td>6 61</td> <td>-55.0</td> <td>12.2</td> <td>12.2</td> <td>51.3</td> <td>٦</td> <td>in the second second second second second second second second second second second second second second second</td>			6 61	-55.0	12.2	12.2	51.3	٦	in the second second second second second second second second second second second second second second second
i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i <td></td> <td></td> <td></td> <td>5. %</td> <td>-6.3</td> <td>-6.3</td> <td>32.9</td> <td></td> <td>ſ</td>				5. %	-6.3	-6.3	32.9		ſ
3 $-8/3$ $1/1$ $1/1$ $1/1$ $3/1$ <th< td=""><td>میامر با با ار</td><td></td><td>•</td><td>· 01</td><td>0 0</td><td>19.2</td><td>レア</td><td>- 3 .1</td><td>in an a</td></th<>	میامر با با ار		•	· 01	0 0	19.2	レア	- 3 .1	in an a
π $-6r$ -2 -2 -2 -2 -2 -2 -2 -2 -2 -3 -1 -3 -1 -3 -1 -3 -1 -3 -1 -3 -1 -2 -32 -32 -32 -32 -32 -32 -32 -32 -32 -32 -32 -32 -32 -32 -12 -2 -32 -32 -11 -2 -32 -11 -2 -32 -11 -2 -2 -32 -2	••••••••••••••••••••••••••••••••••••••	m :				- // -	8.0	1. 1.	·····
(1, 1, 1) -32.5 -10.4 $1.5.5$ $1.5.5$ -26.1 $1.5.5$ -26.1 $1.5.5$ -26.1 $2.5.5$ -32.5 -26.1 $2.5.5$ -32.5 -26.1 $2.5.5$ -26.1 -26.1 -27.5 </td <td>1 1</td> <td>*</td> <td>0,0</td> <td></td> <td></td> <td></td> <td>-3.7</td> <td>, i</td> <td></td>	1 1	*	0,0				-3.7	, i	
7 $-7L \cdot I$ $-7L \cdot I$ $-72 \cdot i_0$ $-19 \cdot q$ $43 \cdot i_0$ 7 $-68 \cdot q$ $-43 \cdot i_0$ $-2L \cdot L$ $16 \cdot 4$ 9 $-7L \cdot I_0$ $-49 \cdot 3$ $-7L \cdot L$ $16 \cdot 4$ 9 $-7L \cdot 2$ $-43 \cdot i_0$ $-33 \cdot L$ $9 \cdot \Gamma$ 9 $-7L \cdot 2$ $-43 \cdot i_0$ $-33 \cdot I_0$ $-31 \cdot I_0$ 9 $-7L \cdot 3$ $-7L \cdot 3$ $-49 \cdot 3$ $-2L \cdot 3$ $-31 \cdot I_0$ 9 $-7L \cdot 3$ $-7L \cdot 3$ $-42 \cdot 4$ $-33 \cdot 1$ $-2L \cdot 3$ $-2L \cdot 3$ 20 $-72 \cdot 1$ $-72 \cdot 32 \cdot 7$ $-72 \cdot 1$ $-71 \cdot 3$ $-71 \cdot 1$ $-2L \cdot 1$ 20 $-79 \cdot 1$ $-73 \cdot i_0$ $-743 \cdot i_0$ $-71 \cdot 32$ $-2L \cdot 1$ $-2L \cdot 1$ 20 $-79 \cdot 1$ $-73 \cdot i_0$ $-77 \cdot 1$ $-21 \cdot 1$ $-21 \cdot 1$ 20 $-79 \cdot 1$ $-73 \cdot i_0$ $-77 \cdot 1$ $-21 \cdot 1$ $-21 \cdot 1$ 21 $-79 \cdot 1$ $-73 \cdot i_0$ $-77 \cdot 1$ $-21 \cdot 1$ $-21 \cdot i_0$ 21 $-70 \cdot 1$ $-43 \cdot i_0$	1			- 22 .5	- 32 .5	- 32.2	-11 . 8	20.1	
r $-6r$ $-6r$ $-9r$ $-2r$ $-16r$ $16r$ <th< td=""><td></td><td>9</td><td>1 /6</td><td></td><td>- 76 - 1</td><td>-4,2 00</td><td>-19.4</td><td>23.6</td><td>Ť</td></th<>		9	1 /6		- 76 - 1	-4,2 00	-19.4	23.6	Ť
0 -63.7 -63.7 -43.0 -33.5 9.5 10 -61.3 -71.3 -43.0 -40.5 3.7 11 -73.5 -43.0 -40.5 -24.1 20 -42.6 -7 -35.8 -21.3 20 -42.6 -7 -43.0 -41.6 -51.6 20 -42.6 -7 -43.0 -42.1 -24.1 20 -9.1 -7 -43.0 -11.3 -116.6 30 -79.1 -7 -13.0 -113.0 -116.6 31 -70.1 -43.0 -75.6 -116.6 40 -70.1 -43.0 -75.6 -116.6 41 -70.1 -43.0 -75.6 -116.6 61 -76.1 -43.0 -75.6 -116.6 40 -72.6.4 -76.1 -43.0 -75.6 61 -72.6.1 -73.1 -73.0 -75.6 61 -72.6.1 -73.6 -716.6 7 -73.1 -73.0 -75.6 7 -72.6 -716.6 7 -73.0 -75.6 7 -73.0 -75.6 7 -73.0 -75.6	•• • ••••		, , , , , , , , , , , , , , , , , , , ,	1.	1 39-	- 43 .0	-26.6	16.4	
10 -41.3 -42.0 -40.3 4.1 11 -11.3 -11.3 -27.1 20 -42.6 - -23.7 -40.3 4.1 20 -42.6 - -37.7 -40.3 4.1 20 -42.6 - -37.7 -40.3 -27.1 20 -47.6 - -37.7 -47.6 -71.6 21 -47.2 -27.1 -37.9 -41.6 -71.6 22 -49.3 -79.1 -37.0 -47.0 -71.6 32 -79.1 -47.0 -73.0 -75.4 -116.6 40 -70.4 -70.1 -43.0 -30.6 -716.6 40 -70.4 -70.1 -43.0 -75.6 -116.6 40 -70.4 -70.1 -43.0 -75.6 -716.6 40 -70.4 -70.4 -73.0 -75.6 -716.6 40 -76.4 -70.4 -73.0 -75.6 -716.6 41.10.77 57.6 57.0 57.0 57.0 75.6 7 -7.5 -71.6 -716.6 -716.6 7 -72.6 -72.6 -716.6 7 -					-63.7	-43.0	-33.1	7.6	Ť
17 -33.5 -42.7 -11.1 -34.1 20 -42.6 - -37.5 -42.7 -11.1 -24.1 20 -47.2 - -37.4 -37.4 -21.4 -71.6 21 -47.2 - -37.4 -37.4 -24.1 -71.6 21 -47.2 - -42.6 -42.6 -26.1 22 -79.1 - -43.6 -143.0 -100.0 26 -79.1 - -73.6 -143.0 -100.0 26 -79.1 - -79.1 -43.6 -114.6 26 -79.1 - -79.1 -43.6 -114.6 26 -79.1 - -79.2 -143.0 -116.6 26 -79.1 - -79.2 -143.0 -116.6 26 -79.1 - -79.2 -143.0 -116.6 26 -79.1 - -79.2 -79.6 -116.6 26 -79.1 - - -13.6 -116.6 26 - - - -143.0 -116.6 27 - - - - -101.9 26 - -		2	6301		5-77-	- 43.0	- 40 . 3	2.7	-
K $-4_{2,1}L$ $-7_{1,2}L$ $-3_{7,3}R$ $-q_{1,4}L$ $-7_{1,4}L$ $2C$ $-4_{7,6}L$ $-7_{7,2}$ $-q_{7,1}L$ $-2_{7,1}L$ $-2_{1,2}L$ $-2_{1,2}L$ $3C$ $-7_{9,1}L$ $-7_{9,1}T$ $-q_{7,5}C$ $-12L_{1,1}L$ -83.1 $3C$ $-7_{9,1}T$ $-7_{7,2}C$ $-12L_{1,1}L$ -83.1 $3C$ $-7_{9,1}T$ $-q_{7,5}C$ $-12L_{1,1}L$ -83.1 $4D$ $-70.L$ $-7_{1,2,0}C$ -143.0 $-1/6.6$ $4D$ $-70.L$ $-7_{2,0}C$ $-1/43.0$ $-1/6.6$ $4D$ $-70.L$ $-7_{2,0}C$ $-1/43.0$ $-1/6.6$ $4D$ $-70.L$ $-7_{2,0}C$ $-1/6.6$ $-1/6.6$ $4D$ $-70.L$ $-7_{2,0}C$ $-1/6.6$ $-1/6.6$ $4D$ $-70.L$ $-7_{2,0}C$ $-1/6.6$ $-1/6.6$ $4D$ -70.6 $-7_{2,0}C$ $-1/6.6$ $-1/6.6$ $4D$ -70.6 $-7_{2,0}C$ $-1/6.6$ $-1/6.6$ $4D$ -10.6 $-7_{2,0}C$ $-1/6.6$ <		۹ '			-254-25-	7. 54-	- 21 . 9	-24.1	
Zo -45.2 -47.3 -47.1 -101.9 -66.1 30 -50.1 -47.3 -126.1 -83.1 30 -50.1 -47.3 -143.0 -103.0 31 -79.7 -79.7 -47.0 -143.0 31 -70.1 -47.0 -143.0 -100.0 31 -70.1 -47.0 -143.0 -100.0 40 -70.4 -70.1 -47.0 -175.4 40 -70.4 -47.0 -175.4 -116.6 40 -70.4 -47.0 -757.4 -116.6 40 -70.4 -70.4 -47.0 55.4 -116.6 40 -70.4 -70.4 -47.0 55.4 -116.6 41 -70.4 -70.4 -47.0 55.4 -116.6 47 -70.4 -70.4 -70.4 50.6 7 47 -70.4 -70.4 -70.4 -70.6 -116.6 47 -70.4 -70.4 -70.4 -70.6 -116.6 47 -70.4 -70.4 -70.4 -70.6 -70.6 47 -70.4 -70.4 -70.6 -716.6 -716.6 47 -70.4	. :		-1200	1	1.24-	- 39 . 9	-91.4	-11.6	<u> </u>
26 -90,1 -93,6 -126,1 -83,1 30 -79,7 -79,7 -13,6 -143,0 -100,0 35 -79,7 -73,0 -143,0 -100,0 45 -70,4 -13,0 -13,0 -143,0 -116,6 45 -70,4 -13,0 -13,0 -15,6 -116,6 45 Noise at zense -43,0 26,1 -13,0 55,2 26,74 45 Noise at zense -43,0 26,1 -13,0 55,2 26,74 45 Noise at zense -43,0 26,1 -16,0 -16,0 46 -76,4 -13,0 26,1 -116,6 47 -76,4 -13,0 26,1 -116,6 47 -76,4 -76,4 -16,6 -116,6 47 -76,4 -13,0 26,7 -116,6 47 -76,4 -13,0 7 260,6 47 -75,6 -116,6 -116,6 47 -13,0 7 26,7 -116,6 47 -16,6 -16,6 -16,6 -16,6 47 -16,6 -16,6 -16,6 -116,6 47 -16,6 -16,6 -16,6 -16,6 <td>• • • •</td> <td>20</td> <td>-4606</td> <td></td> <td>- 49 - 2</td> <td>- 42 - 1</td> <td>-108.9</td> <td>- 66 . 9</td> <td></td>	• • • •	20	-4606		- 49 - 2	- 42 - 1	-108.9	- 66 . 9	
30 -79-7 -79-7 -13-0 -103.0 -100.0 35 -79-1 -73-0 -43.0 -143.0 -116.6 4/2 -70-6 - -70-6 -43.0 -116.6 -116.6 4/2 -70-6 - -73.0 -143.0 -116.6 -116.6 4/2 -70-6 - -73.0 -754.6 -116.6 -116.6 6/7 -70-6 - -73.0 28.6 260.77 -116.6 6/7 -70-6 - -73.0 25.6 2607.4 -116.6 6/7 -70-6 - -73.0 25.6 2607.4 -116.6 6/7 - - 35.6 2607.4 -700.6 7 6/7 - - 35.6 2607.4 -700.6 7 6/7 - - 35.6 2607.4 -700.6 7 6/7 - - 35.6 2607.4 -700.6 7 7 - - 35.6 2607.6 -700.7 7		21		1	69 - 1	-43.0	-126.1	-83.1	1
32 -110-1 -70-1 -43.0 -154.6 -116.6 40 -20-6 -110.6 -110.6 -110.6 -110.6 Fire News RT 25 x 25 x 25 x 25 x 25 x 25 x 25 x 25	ریفارین ہے۔	30	1001-		- 79 - 7	- 42.0	-143.0	0.001-	-
F. Neise at 25 kiss = 43.0 DB RE 1 JUBRY F. Neise at 25 kiss = 43.0 DB RE 1 JUBRY ATHADTH STERMS HINGLE = 1° ATHADTH STERMS HINGLE = 1° DSL DEPTH = 1200 FT Table 26. ECHO/BACKGROUND LEVELS FOR 8' X 150' ARRAY		3	/ //-	• 1	-70.4	-43.0	7-551-	-1/6 .6	
F. Neise at 25 Mis = 43.0 DB RE 1 JUBRY (1984) (1984) (1984) - 300 FT (1984) (1984) - 1200 FT (1984) (1984) - 1200 FT (1984) (1984) - 1200 FT (1984)		27							
F. Neise at 25 x13 = -43.0 DB RE 1 JUBRY	ī			- -			T-ree Aspr	v	- i W
Table 26. ECHO/BACKGKOUND LEVELS FOR 8' x 150' ARRAY		F N Armon	erse AT REMIS = -4.	RE		· · ·	DSL DEPTH	= 1200 FT	P11-2
	2-	 	Table 26		KOUND LEVELS	· · · ·			+4100€

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ECHO LANJE FEHO/BACKGROWN LUL .	42.1	19.6		-0.5	1.4	22.0	23.6	16.4	7.6	2.7	- 29.0	-61.0	. 14.9	- 83.1	0,001-	-116.6		• 300 FT	
ECHO LEVEL	51.8	2.9	14.5	8.0	7. 5.	8. 17-	1. 21-	36.6	-33.5	-40.3	-71 . 8	-51.4	5 801-	-126 -1	0. 541-	2.22		Тяяцет Детен - 300 Д54 Дерги - 1200	
Brgand Lu DR	9.7		111	ه رر	-562	-33 . 8	.43.0	0. 2/-	-4/5.0	-42,0	-42.6	-30	-24.0	-43.0	0.2%.	0.8/1.		· · ·	1 1 1 1
Torn. Rivers Bugino Lu	9.7	14 .3	11.1	5 . 5	1.5.	-34.4	1.12.	2.0%-	-66 06	-60.6	-33.1	-30.6	-24.0	-97.9	- 84,4	1 101-			
DSL Revens DB	-34.7	14,3	17.1	و محر	-5-1	-34,4	1.	1.			1.		je	1-	1.	1-	······································	0 25 25 1 JUST	
KANGE JURE & BOTTON	9.7	.	.	1	- 92.5	7.11-	- 74,7	-24.5	-662 6	-60.6	14821-	-30.6	-2:/.0	- 87.9	- 84 . 4			Fiew L'use Ar 25 xrs = -42.0 DE Arnany Sice Ang Prair = 10°	
KANGE		~	3	4	J		7	6	6	0/	, v	20	2,0	30	31			Flew Las. American	1
		•	-								•	•					-		2-0

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Luz .											WP11-2	-41006
3	24.5	6 · 5	31.1	-14.9	0 72 -	- 28 . 1		1. 29-	0.001-	71711-	• 300 FT	
FCHO LEVEL	32.9	6.8 7.6-	1, pr-	-36.6	-40.3	1.15	F. 16-	[.]21-	0.Ehl-	7 . 6.57-	TARGET DEPTIN . DSI. DEPTIS	0' ARRAY
84% 84	7.3	1.121	-42.0	2 · /·	· · // -	-42.11		1.3/2-	- 4/3 .0	-1/2 . 8		FOR 8' x 150'
Torn. Rever	2.2 10.9	1.1.1.	- 39.0	-11 • 7	-14 .3		9-24-9	-64.0	-63 .2	-52.6	žu	ECHO/BACKGROUND LEVELS
DSL REVERS	3.2	4.1	-39.0	1.1	• •		1 - 1	1			21/1 20	
JURE & KOTTON	513	- 79 /	- 69.9	-11-7	-14 -3	-171 - 6	6 . 42.	-64.0	-63.2	- <u>-</u> 7, e.	FTOW NOASE AT 25 X15 = -43.0 28 A	Table 28.
Salt Salt					5		20	30	, r,	1	Flow Nor. Henrich 11	2-65

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	1. 2.42												1211					.ft	e - 2 Pri Presidente P	W	11	-2		.00(** *.)		· · · · · · · · · · · · · · · · · · ·	
	Ecta Backs Rout	1 A A							17.7	5. P - 1	2.8-	11.4	25.6	1.1.2	0.2.2	28.6	-93. 1	-100.0	2. 211-					•	•		•		
	ECHO LEVEL			5.1	22.9	N.C	9.0	-3.7	-//.8	-15.4	-26.6	-33.5		-7/. 8		-101.9	1.721-	0. 2%/-	7.631-	 Taste habre	Act Deres			ARRAY	•	•	:		
	BUGRND LIL	PZ	-	6:4	·f. 7	11.4	2.6	./0.6	-29 5	-15-1	1.81-	-161/-	-14.7	-43.0	4132-	-30 •5	-43.0	-43.0	-43,0				•	FOR 8 ¹ x 150 ¹					
	Targe Revers	86		6.4	9.7	11 .4	226	-10 .6	-29,9	-15-1	-19.1	-11-11-	-14 .7	-61.7	-26.4	-30 .7	-64.4	- 63.7	-58.3		•	• ••		ROUND LEVELS	· , :				
	DSL Revere	- 20		30	9.7	11.4	2.6	-10.6	-40.5	•	1.	1.		1.	1.	1-	1-	1.		1 2 2 2 1 12 DV	, ,			ECHO/BACKGROUND	•				
	Juse & Borroy	Rovers be		3.7	1-]-	- 69.2	-29.9	2 12 - 1	- 18 . 1	-11.1	-14 .7	- 51 . 7	-2604	-30,7	-6404	- 63, 7	-58.03	 Fradare Brocks - 420 AR	Service Company Diver	and fully and		Table 29.	1	• •	•		
	Rawfo			~			*	N				•	Q		20 .	25	30	35	40	Eren Nor	General Contraction								
													2 × 1				 		L			`.	2-	66	نو.	, ·	• .		

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ECHO Lover Leve/Backfrows Luz.	16.8	49.5	4.1	5.2					-15.			7 8 7-		- 72 -	-100.0	-116.6			300 FT	1200 FT	2-41	
FCHO KAVEL DR	51.8	32.5	14.5	8.0	5.2.7	-11.9	4.61-	-26.6	- 23	-40.3	37 16-	1.18-	6.101-	1.24-	- 143 . 6	- 153.6			TARGET DEPIN .	DSL DEPIN .		' ARRAY
Brgand Lu DA	 20	9.4	9.9	7 '5	-6.9	E. 81-	6.14.	-27.3	-17.5	-16 -1	- 41 .5	-27.8	3.18-	-1/2 . 0	-42.0	-43.0				 		FOR 8' x 150'
Torne Reverse Bryand Lue 28 23	5.0	9.4	9.8	1.2	-6.9	-19.3	6.15-	-27.4	-17.9	-15 .1	- 47.0	-22.0	-32.1	-6505	-6% . 5	-17.2		•				/PACKGROUND LEVELS
DSL REVURE	2.0	9 .4	9.8	1.2	-12.4	-42.2		14	14	1-	1-	1.	1~	1~	15			•••	ODE RE I JIERS	. 06 #		ECHO
KANGE JURE. & BUTTON . KIDS ROVERS DB	2.2	1	1-		-8-1	-12.3	-21.9	-2204	6-11-	-16.1	-47.0	-22.8	-32.1	<u> </u>	-64.5	5.922		•	FLOW NOVSE AT 25 X75 = -43.0 23	11211 2011 376 6 RING VINGLE = 90	• • • • • •	Table 30.
KANGE		~	-3	#			7	-	6	a	2	20	25	30	35	40		1	FLOW NORS.	11211:1121		
		• • • • •	• • • •	•	•			-		-	2	•		•						-	2-6	57

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