

Chapter II

Back-Arc Convergence and Ophiolite Emplacement, A Case Study of the Okushiri Ridge, Japan Sea

II.1 Introduction

Marginal basin is a general term for the basins which are located in continental margins, continent-arc boundaries, and behind of intra-oceanic arcs. Back-arc basin is one of them, being developed behind active and/or inactive arc-trench system (Taylor & Karner, 1983). One of the striking features of back-arc basin is that there is no basin older than late Cretaceous exist at present (Miyashiro, 1986). As there is no reason to believe that the formation of back-arc basin is restricted to recent event in geologic record, they have been consumed somehow. One likely mechanism to explain this is the consumption of back-arc basin by plate convergence. Representative example of this is the subduction of the Philippine Sea plate. Then a fundamental question occurs concerning how back-arc basin convergence is initiated.

Second important point I try to make is related to the emplacement of ophiolites. Recent view on the origin of ophiolite indicates that majority of ophiolites are likely to be arc or back-arc basin origin (Fisher & Engel, 1969; Miyashiro, 1973; Maruyama & Liou, 1988). Thus, it is conceivable that the consumption of back-arc basin by convergence can be linked to ophiolite emplacement.

The Japan Basin is a back-arc basin which occupies the northwestern part of the Japan Sea. Average water depth is about 3,000 meters, and the topography is extremely flat in the middle part of the basin. Murauchi (1972) and Ludwig *et al.* (1975) showed that the Japan Basin is composed of a normal oceanic crust

based on the refraction seismic experiments. Along the eastern margin of the Japan Basin, a chain of ridges runs approximately in north-south direction. The northern part of this chain of ridges is called Okushiri Ridge which divides the Japan Basin to the west and the several closed basins to the east, for example the Musashi Basin and the Shiribeshi Trough (Fig. II-1). The boundary between the Japan Basin and the Okushiri Ridge was proposed as a convergent plate boundary between the Eurasian plate and the North American plate (Nakamura, 1983; Kobayashi, 1983; Seno, 1983; Tamaki & Honza, 1985).

The purpose of this study is to evaluate the style of structure and the history of tectonics which is responsible for the formation of the Okushiri Ridge. Then, I try to discuss more broader implications to the emplacement of ophiolite. The data set I use are from some "seabeam" maps obtained by Japan Marine Sciences and Technology Center (JAMSTEC), multichannel seismic profiles by Ocean Research Institute and the results of Ocean Drilling Program (ODP) Leg 127.

II.2 Topography and Structure at around the Okushiri Ridge

Detailed bathymetric survey and deep-tow side-scan sonar survey of the Okushiri Ridge were done by the JAMSTEC simultaneously as a site survey of the "Shinkai 2000" dive in 1989. Closed parts by dashed lines in Figure II-1 show the seabeam survey areas. In the northern part of the Okushiri Ridge, several lineations are recognized in the bathymetric map (Fig. II-2). The lineations run NNW-SSE to NW-SE direction which is

parallel to the Suttsu submarine canyon. The lineations cut across the topographic elongation of the Okushiri Ridge. Thus, I interpret this to be active faults. Yamagishi & Kimura (1981) reported the regional stress field at the Kuromatsunai Lowland in Hokkaido from the field observation of active faults. They showed a NW-SE compression. Thus, it can be interpreted that the active faults on the Okushiri Ridge should be strike slip faults with sinistral slip component. The extension of the Kuromatsunai Lowland fault continues to the Suttsu submarine canyon and reach to the Shiribeshi seamount (Fig. II-1). There is no obvious structure in the seabeam map (Fig. II-3). However Watanabe *et al.* (1988) reported some normal faults are found by PDR (precise depth recorder) surveys on the top of the Shiribeshi seamount which run north to south. The lineation of the Suttsu submarine canyon shifts slightly to the east, and continue to northward. It may reflecting the topographic feature of strike-slip fault.

Side-scan survey was originally planed to understand the deformation in the Shiribeshi Trough which was caused by west dipping large thrust faults of the Okushiri Ridge. The track length is about 8 miles, and unfortunately could not reach to the ODP Site 796 (Fig. II-4). Figure II-5 shows the side-scan image of this survey which is applied geometric correction. Some bulges are recognized around the area designated by coordinate $42^{\circ}52.5'N$, $139^{\circ}28.6'E$ (Fig. II-6). The height of the bulges is estimated as about several meters, and the strike is $N30^{\circ}W$ to $N40^{\circ}W$. The formation of bulges seems to be closely related to the activity of boundary faults which develop between the Okushiri Ridge and the Shiribeshi Trough as described below.

The topography and surface structure of the Okushiri Ridge show that the ridge is tectonically active even in now and the lineations show the mixture of deformations since the formation of ridge.

II.3 Stratigraphy and Physical Properties on the Site 796

The oldest sediment (about 12 Ma) so far found in the Japan Basin has been dredged from the western cliff of the Kaiyo Seamount, northern part of the Okushiri Ridge (Hoyanagi *et al.*, 1987; Sagayama, 1988). The evidence imposes the limitation to the youngest age of the Japan Basin.

ODP Leg 127 drilled two holes, Holes A and B, on Site 796. The conditions of drilling are as follow (Table II-1).

Table II-1:

	Lat.(N)	Long.(E)	WD(m)	Pen.(m)	CR(%)
Hole A	42°50.94'	139°24.66'	2570.6	242.9	63.9
Hole B	42°50.94'	139°24.84'	2622.6	464.9	29.0

(Lat.: Latitude Long.: Longitude WD: Water Depth Pen.: Penetration CR: Core Recovery)

Lithostratigraphy

Site 796 could not reach to the basement of the Okushiri Ridge, however, the oldest sediments is estimated as middle Miocene. The sedimentary section cored at Site 796 was divided into five lithological units as follow.

Unit I: 0 - 146.2 mbsf (meters before sea floor)

This unit is divided into two subunits. Subunit IA (0 - 51.7 mbsf; Quaternary) is composed of diatom-bearing clay and silty clay with sand. This unit is moderately to highly bioturbated, and associated with soft sediment deformation by slumping and microfaults. Subunit IB (51.7 - 146.2 mbsf) shows also clay and silty clay with frequent sand beds. The frequency of soft sediment deformation features decreases compared to Subunit IA. Sand beds occur throughout the subunit as scattered thin beds (typically 1 - 10 cm thickness, thickest 65 cm) that have sharp basal contacts. The sands are dominated by volcanic lithic fragments and pumice of fine to medium grain size.

Unit II: 146.2 - 223.5 mbsf

Clayey diatom ooze and diatom claystone are dominant lithology. This unit is characterized by a significant increase in the abundance of diatoms compared to the Unit I. The detrital input, like sandstone and pebbly claystone increases toward the base of the unit. Sandstone beds occur as thin (2 - 10 cm) graded units with sharp basal contacts and are dominantly composed of volcanic lithic fragments and glass or pumice. The depositional age of this unit is determined by diatoms as early Pliocene to late Miocene. The base of this unit is defined by the last occurrence of diatoms which reflecting the diagenetic transition of opal-A to opal-CT.

Unit III: 223.5 - 301.0 mbsf

Siliceous claystone, claystone, and sandstone comprise main lithology of the unit. Claystone units are moderately to highly bioturbated. Sandstone and siltstone interbeds are abundant in the middle part. Sandstones (a few centimeters to 60 cm) are

graded and medium to coarse grained with volcanic lithic detritus and glass shards. Scattered glauconite is observed.

Unit IV: 301.0 - 416.5 mbsf

Dominant lithology of the unit is siliceous claystone, pebbly claystone, tuffaceous sandstone, and tuff. This unit is characterized by siliceous claystone interbedded with coarse grained pyroclastic deposits which consist of sandstone and pebbly claystone with abundant volcanic detritus and discrete tuff beds. The opal-CT to quartz diagenetic boundary is observed at 301 to 330 mbsf. The claystone is well bioturbated. Pebbly claystone commonly occurs through this unit and is matrix-supported, coarse grain sand to pebble size volcanic detritus that includes pumice, tuff, and other volcanic lithic fragments. Laminated tuffaceous sandstone is present as thin beds throughout the unit, and laminated, graded tuff beds (some exceeding 2 m in thickness) also occur.

Unit V: 416.5 - 464.9 mbsf

The unit is composed of siliceous claystone and silty claystone, and can be distinguished from overlying strata by the paucity of coarse clastic and/or pyroclastic deposits and by an increase in dolomite and Mg-calcite. Siliceous claystone is generally bioturbated. Fine grained vitric tuffs, some with calcareous cement, and sandstones are observed as a minor lithology. The sandstones are typically showing a normal size-grading from fine to medium sand upward to silt and clay.

The most significant lithologic change in relation to tectonic evolution of the Okushiri Ridge occurs between Subunit IA and IB. Below this boundary, detrital components and volcani-clastics occur as turbidites throughout the section. The activity of the

turbidites diminishes gradually and became virtually absent in Subunit IA. This boundary signifies an important tectonic movement and/or uplift of the Okushiri Ridge which will be discussed later.

Physical Properties

A full program of physical property measurements was carried out for the Site 796 cores. The magnetic susceptibility, the GRAPE density, and the P-wave velocity were measured on the multi-sensor track (MST). Index properties, thermal conductivity, formation factor, and the P-wave velocity were measured on discrete samples. Index property data are sorted by depth (mbsf) and presented in Appendix-E, and also the data are smoothed by five point running mean method with weight, 0.5, 0.8, 1.0, 0.8, and 0.5 (Fig. II-7). Thermal conductivity is also smoothed and plotted in Figure II-8. The physical properties of all recovered sedimentary sections are described for each lithological units as follow.

Unit I: Overall the index properties do not show a significant change with depth in this unit. In some parts of which including ash layer are show a little variance in every index properties. Unit IA, however, still exhibits a high porosity because the depth is shallow, and the unit has not had sufficient time for consolidation. Wet bulk density and the grain density change little in Unit IB. Porosity and water content slightly decrease with depth, on average, due to increasing overburden pressure. Thermal conductivity decreases approximately linearly with depth from 0 to 120 mbsf. It may be concordant with the character of the porosity and the water content.

Unit II: The grain density and the wet bulk density vary with the diatom content which is clearly able to see in the results of the another drilling sites. The mean values of bulk density, 1.60 g/cc, and grain density, 2.42 g/cc, are the lowest measured in the entire section. As pointed out in Chapter II, the high diatom content closely relates to the strength of the sediments. Because of this, the porosity and the water content maintain relatively high values from Unit I to Unit II. The relative diatom volume has a peak at around 150 to 160 mbsf based on the smear slide observations. Wet bulk density and grain density reach a minimum at around this depth. This behavior is quite similar to that observed at Sites 794 and 797. Porosity and water content, however, maintain a high value down to approximately 200 mbsf, but at the same time decrease slightly with depth to 200 mbsf. The mean values of the porosity and the water content are approximately 15 - 20 % lower than at the other sites of Leg 127. Thermal conductivity gradually increases with depth below 120 mbsf. These are significant changes from the profiles at the other drilling sites.

Unit III: The bulk density, the thermal conductivity, and the P-wave velocity increase, and the other index properties decrease at the opal-A/opal-CT transition. At the Sites 794 and 797, all of the measured physical properties with the exception of grain densities showed a sharp and relatively large change at this diagenetic boundary. The changes across the opal-A/opal-CT zone at this site are more gradual rather than sharp. The mean values of physical properties change about 15 to 20 % or more between Unit II and Unit III. The general gradients of all index properties except grain density from 200 to 250 mbsf, through the opal-

A/opal-CT transitional zone, are as follows: wet bulk density, 0.33 g/cc/50m; porosity, 20 %/50m; and water content, 16%/50m. The general gradient of thermal conductivity through the same zone shows 0.19 W/m/K/50m. Compared with the other sites, the physical properties at Site 796 change more gradually across the opal-A/opal-CT diagenetic boundary. As at the other sites, the wet bulk density increases linearly with depth, and the porosity and the water content decrease below the opal-A/opal-CT boundary. There is a little change in the trend of the physical properties and the velocity at the boundary from Unit III to Unit IV (approximately 275 to 325 mbsf). The bulk density scarcely drops, and the porosity and the water content maintain the same values or slightly increase in this interval. The acoustic velocity meanders between high and low values (Fig. II-9), which is indicative of alternating hard and soft layers. These features are not dependent on the individual sample selection, because the sample from the major lithologies which always contained silt or clay. In Unit III, I measured samples of claystones, the major lithology, and infrequently made measurements in sandstone layers, of which there are only two samples. Pure sandstone shows extremely low porosity and water content, and high wet bulk density. There is little or no drilling disturbance, because these data plot with very low scatter.

Unit IV: All properties gradually change with depth in this unit except in a small anomalous zone which is a continuation from Unit III. In Figure II-8, the points which plot far from the trends represent sandstone samples. The other samples are claystones. There is a trend across Unit IV to Unit V of increasing

wet bulk density and slightly decreasing porosity and water content.

Unit V: All properties show normal trends with depth; the porosity and water content decrease approximately linearly with depth, and the bulk densities, thermal conductivity, and acoustic velocity increase. However, without deeper samples, it is difficult to evaluate the trends of physical properties in the lowermost 50 m.

The most important feature of the physical property change in this site is that of opal A/CT boundary. Here the change is far gradual as compared with basin sites. The significance of this can be interpreted in relation to tectonic movement of the Okushiri Ridge. This will be discussed later.

II.4 Acoustic Features of the Okushiri Ridge

Multichannel reflection seismic surveys were carried out at around the Okushiri Ridge by Ocean Research Institute, University of Tokyo. KH-86-2 cruise (R/V Hakuho-Marui) investigated at the southern part of the Okushiri Ridge by 12-channels seismic system. The other two surveys were performed by the R/V Tansei-Marui (KT-87-6 and KT-88-9) using 6-channel seismic system respectively. Figure II-10 shows the track lines of these surveys. Line 5 and 6 are taken by the KH-86-2 cruise, total length is approximately 163 km. Line MC1 is collected by the KT-87-6 cruise. The length of survey line reached up to 112 km. KT-88-9 cruise surveyed at around the Okushiri Ridge and also the northeastern area of the Japan Basin. All surveyed data were

processed to migration processing (finite difference migration). Structural interpretations are given to the each profile and are discussed as follow.

Line-MC1: This line runs from the Japan Basin to the Musashi Basin along the 44° line of latitude (Figs. II-11 and II-12). The sedimentary sections above the acoustic basement can be divided into two units separated by a strong reflector. The reflector was identified as the opal-A/CT diagenetic boundary determined from drilling results of the Site 795 that was close to the line MC1. The top of acoustic basement is correlatable to the top of oceanic crust layer II (Murauchi, 1972; Ludwig *et al.*, 1975). The surface topography of the acoustic basement shows small irregularity and also is inclined to the east. The acoustic characters of the basement of the Okushiri Ridge resembles to that of the Japan Basin. However the surface feature of the acoustic basement of the Okushiri Ridge shows slightly rough topography compared to the Japan Basin. This may be relate to the minor faulting during the uplift of Okushiri Ridge. Several submersible dives and dredges were conducted to elucidate the nature of acoustic basement along this seismic line (Miyashita *et al.*, 1987; Tamaki *et al.*, 1988; Miyashita *et al.*, 1989; Tokuyama *et al.*, 1989; Tokuyama *et al.*, submitted by "Marine Geology"). They showed that the acoustic basement of Okushiri Ridge is an equivalent for the oceanic crust layer II. The boundary between the Japan Basin and the Okushiri Ridge on the line MC1 is composed from several thrust faults and branch faults. There are several branch faults in the western wall of the Okushiri Ridge which seem to converge to a thrust of more deeper one which should a detachment thrust. The western wall of the Okushiri Ridge is composed from a piled

nappe structure of oceanic crust. Fukao and Furumoto (1975) has reported that in the case of 1940 earthquake off Shakotan ($M=7.0$; latitude, 44.35°N ; longitude, 139.46°E), a fault plane cut through the entire crust was estimated. This earthquake is closely related to the thrust activity at the boundary between the Japan Basin and the Okushiri Ridge. The direction of the earthquake fault strike presents the north to south direction along the trend of the Okushiri Ridge with the focal mechanism showing the almost east-west compression. This evidence should be taken as a possible indicator of the detachment fault between the Japan Basin and the Okushiri Ridge. In another word, it can be suggested that this boundary thrust cut entire crust and may represent the plate boundary between the Eurasian plate and the North American plate as suggested by Nakamura (1983), Kobayashi (1983), Seno (1983), and Tamaki and Honza (1985). The western part of the Okushiri Ridge in this profile is inclined to the east about 4 degrees involving the uppermost sedimentary layer. This indicates evidence for active tectonics around the Okushiri Ridge. The vertical offset of the acoustic basement between the Japan Basin and the Okushiri Ridge is approximately 2 seconds (two-way traveltimes) even after the tilting correction of the Okushiri Ridge was made. If it is possible to measure the dip angle of the detachment thrust, the horizontal movement can be estimated. Then if the offset of the acoustic basement at the boundary was cancelled by only a thrust fault which has 2 to 3 degrees angle in dip, the horizontal convergence should be 30 to 40 km. In contrast, there are also active thrusts which dip to the west at the boundary between the Okushiri Ridge and the Musashi Basin. The seismic profile shows that the thrusts are listric faults. In the

shallow part of the fault, the dip angle increase which may mean the faults include a lateral slip component. The boundary fault between the Okushiri Ridge and the Musashi Basin is a back thrust caused by the detachment thrust between the Japan Basin and the Okushiri Ridge. Submersible observations also showed the existence of active reverse fault at the boundary (Tokuyama, 1990, personal communication). Furthermore, to the east of the Okushiri Ridge the sedimentary sequence shows folding which may be caused by wedge deformation between the detachment thrust and the back thrust.

Line-5: Line-5 runs along the $42^{\circ}50'N$ line in latitude from the Japan Basin to the Shiribeshi Trough (Figs. II-13 and II-14). Total length of this line is approximately 89 km. The boundary between the Japan Basin and the Okushiri Ridge here shows no significant structural boundary with only small offset faults. The acoustic basement, possibly oceanic crust layer II can be continuously traced from the Japan Basin to the Okushiri Ridge. On the other hand, the boundary between the Okushiri Ridge and the Shiribeshi Trough is divided by listric thrust faults dip to the west which exhibit quite recent activities in the profile. This inference was supported by the fact that there is no evidence of growth fault and also the faults cut the upper most deposits of the Shiribeshi Trough. The tilting of the Okushiri Ridge, about 3° , also suggests the recent movement. Small topographical bulges are seen in the western edge of Shiribeshi Trough. These could also indicate the extensions of the listric reverse faults. The acoustic basement of the Shiribeshi Trough has quite different structure as compared with that of the Okushiri Ridge. The acoustic basement of the Shiribeshi Trough is continuous to the east and can be

correlated to the Neogene sediments which are distributed in the northwestern Hokkaido. Several listric reverse faults are seen in the boundary between the Japan Basin and the Okushiri Ridge which have small offsets.

Line-6: Line-6 runs along the 43°N line in latitude as parallel as the line-5 (Figs. II-15 and II-16). Total length of this line is about 74 km. The acoustic stratigraphy and overall structure are quite analogous with the line-5. There are, however, some differences between the two. The degree of tilt angle of the Okushiri Ridge is much greater here than the line-5, 10 miles southern part of the Okushiri Ridge, showing approximately 8 degrees to the west. Some listric thrust faults are seen at the boundary between the Okushiri Ridge and the Shiribeshi Trough, but they show less intense deformation compared to the line-5.

These structures are still active which supported from the results of the sediment physical properties at Site 796 as describe as follow. One of the prominent features of the sediment physical properties at Site 796 is the relatively gradual change of physical properties across the opal-A/CT diagenetic boundary as compared to the sharp change observed at Sites 794 and 797 (see Chapter I). According to the available physical properties data, the top of the diagenetic boundary between opal-A and opal-CT is around 205 mbsf. At this depth, there are relatively large changes in the wet bulk density, porosity, and water content (Fig. II-7). The opal-A/CT transition zone is obviously different from that at the Sites 794 and 797 in terms of the width of the zone and the change in relative values of index properties across the boundary. The change in index properties across this zone is significantly smaller at this site, partially because the wet bulk density is 10 to 15 %

higher, the porosity is about 10 % lower, and the water content is 10 to 15 % lower above the transition than at the Sites 794 and 797. Grain density shows almost the same values. The lower water content at Site 796 may relate to the lithology (eg. lower diatom content, coarse grain size, and/or higher carbonate content) or to a greater degree of lithification, but the exact cause of the difference is uncertain. These differences in the physical properties in the upper section of Site 796 as compared to Sites 794 and 797 accounts for the smaller change in the physical properties across the opal-A/CT boundary, but cannot explain the gradual nature of the opal-A to opal-CT transition. The diagenetic boundary may be migrating upward because of the recent tectonism and related high thermal gradient at Site 796. A significant possibility is supply of heat by pore water flow at 175 to 200 mbsf. The water content is maintained at a high value over this interval despite a decrease in the diatom content. This high water content may reflect water flow, similar to the seepage at accretionary prisms in subduction zone, which closely relate to active faults. Large thrusts around the Okushiri Ridge may serve as conduits for fluid flow.

11.5 Timing of the Initiation of Convergence

One of the results of Site 796 drilling (ODP Leg 127) is the age determination of uplifting of the Okushiri Ridge. The shallowest and/or youngest sands were recovered at about 63 mbsf in upper most Pliocene sediments which dated as 1.8 Ma by diatom stratigraphy. The boundary was designated as Subunit IA

and IB boundary. Most sediments below the sand bed are composed from turbidites and chaotic sediments. These gravity flow sediments were interpreted to come from the land area of western Hokkaido. The change in the lithology thus can be interpreted as the event of the uplift of the Okushiri Ridge, escaping from the level of the turbidity current deposition.

Takeuchi (1985) has also mentioned the change of regional stress field in the NE Japan from an extension to a compression at around 3 Ma, which roughly coincides the age obtained by the drilling. If the level of acoustic basement both the Okushiri Ridge and the Japan Basin was same, it is possible to estimate a relative total offset which caused by the listric thrust fault. The relative offset is about 1.5 seconds (two-way traveltimes). The mean velocity of sediments can be assumed as 2000 m/sec. Then the relative offset between the acoustic basements is about 1500 m. Thus the vertical uplift rate is about 0.75 mm/yr in 2 Myrs. The occurrence of disturbed bedding in Quaternary deposits suggests that slumping process were active during the uplift of the Okushiri Ridge. The oldest evidence of significant soft sediment deformation and inclined beds is represent at 45 mbsf, about 0.9 Ma by diatom stratigraphy. The time gap between the last occurrence of the turbiditic sand and the initiation of soft sediment deformation shows the phase of uplift without much tilting development of the Okushiri Ridge uplifting. The onset of convergence is about 2 Ma, which is still active now.

11.6 Significance of Inversion Tectonics for Ophiolite Emplacement

The Okushiri Ridge is composed of the oceanic crust layer II as an acoustic basement and sediment cover on it. This is confirmed by many rock samples, in situ observations by submersible, refraction surveys, and reflection surveys. If the Okushiri Ridge will emplace to the Japan Arc, the Okushiri Ridge could be an ophiolite slab as observed in many ancient records. Multichannel seismic profiles show the active detachment of the Okushiri Ridge at the boundary between the Japan Basin and the Japan Arc. The structure can also divide into two tectonic styles. One is a subduction type with a back thrusting and the other is a obduction type (Fig. II-17). An example of the former type is represented in the line-MC1, and the latter type in the line-5 and 6 respectively.

What cause these diverse type of structural styles? Recent structures cut across the N-S trending Okushiri Ridge (see Fig. II-2). This suggest that the recent tectonic movement is not necessary to be responsible for the production of the peculiar structural styles. I suggest that the recent tectonics cause the reactivation of the older structural trends between the Japan Basin and the Japan Arc. The boundary between the two was originally formed during the rifting of the Japan Basin. Initial extensional tectonics may be produced normal faulting along this boundary and then thermally subsided. Sedimentary piles essentially masked the topography until late Pliocene. Compressional tectonics which commenced since them produced reverse faulting and basement detachment. I suggest that this inversion of tectonics has been responsible for the structural evolution of the Okushiri Ridge.

Figure II-18 shows the distribution of embryo of ophiolites which are divided into two styles. These formation mechanisms are inevitable consequence of the back-arc convergence. Thus inversion tectonics can be widely applied as a main mechanism of ophiolite emplacement.

II.7 Conclusions

Multichannel seismic profiling, ODP results and topographic analysis all indicate that the Okushiri Ridge has been subject to an active tectonics of compression since late Pliocene. Crustal detachment causing active thrusting is identified. Two typical convergent structures were observed around the Okushiri Ridge: one is a "subduction with back-thrusting" type, and the other is a "obduction" type. Significant structure in both types is the formation of back thrusting which makes the isolated blocks of back-arc basin crust. It is important for the origin of ophiolites. Moreover the convergent structures may correlatable with the nappe structures around the continental margin.

Originally the main thrusts may be initiated reactivating old structure produced by rifting. Tectonic inversion thus can be an important mechanism for ophiolite emplacement.

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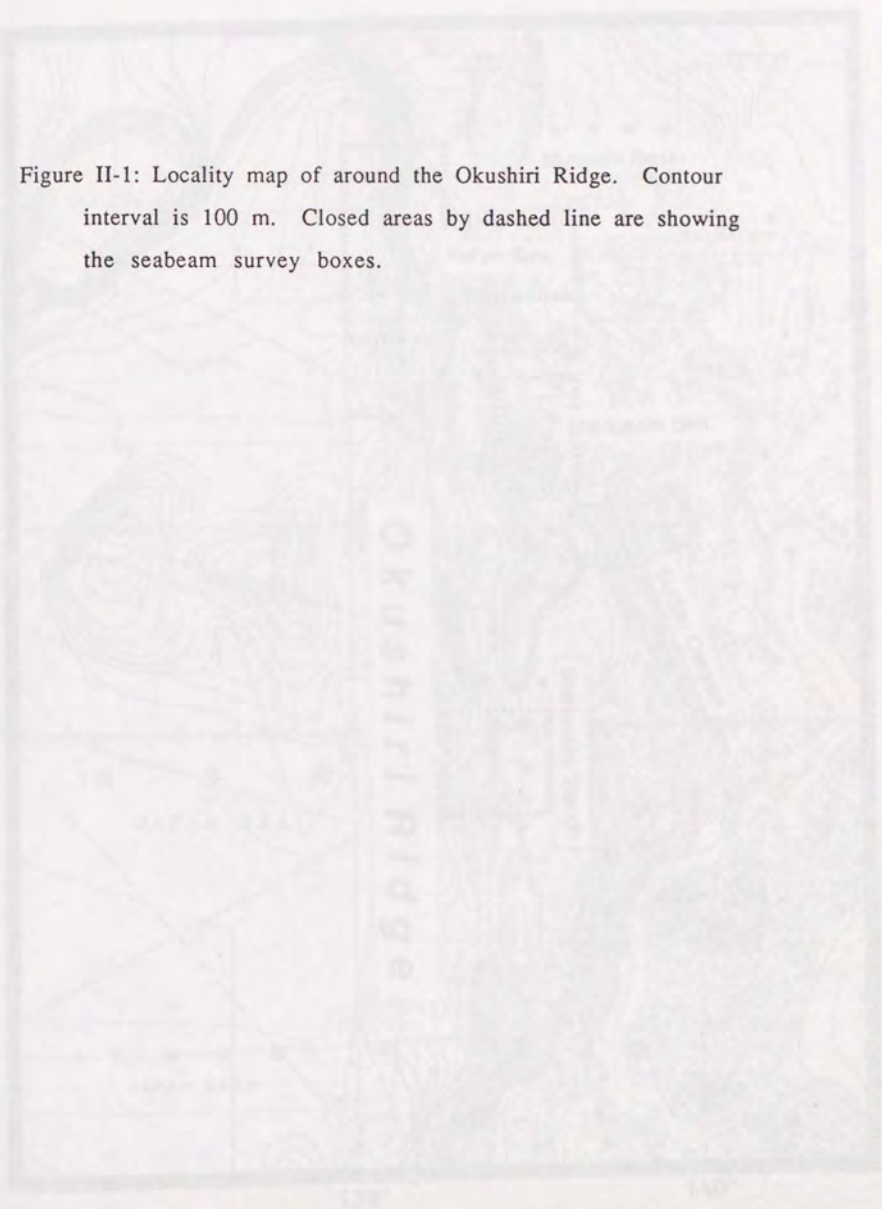
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* : in Japanese

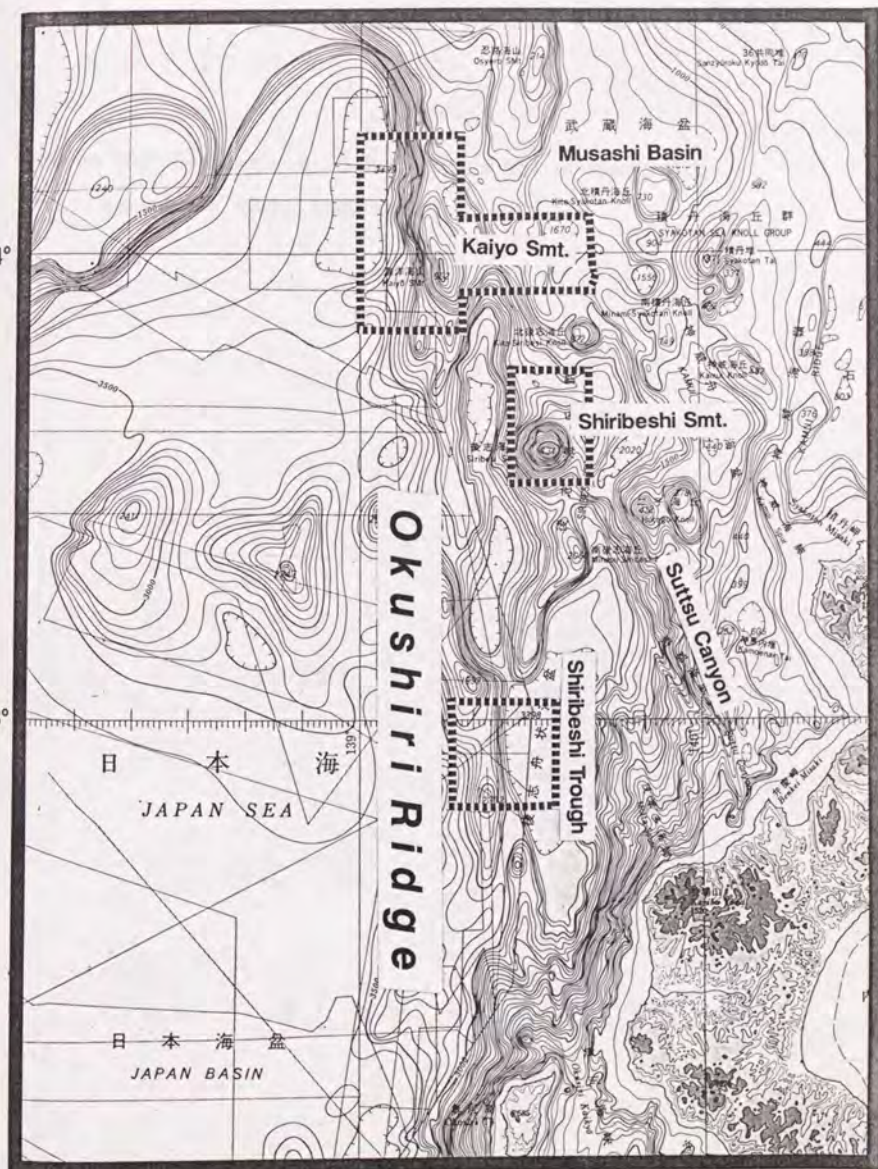
** : in Japanese with English abstract

Figure II-1: Locality map of around the Okushiri Ridge. Contour interval is 100 m. Closed areas by dashed line are showing the seabeam survey boxes.



44°

43°



139°

140°

Figure II-2: Seabeam map of the northern box in Figure II-1,
around the Kaiyo Seamount.



Figure II-3: Seabeam map of the middle box in Figure II-1,
around the Shiribeshi Seamount.

MERCATOR PROJECTION SEABEAM MAP
(1/100000 AT 43° 30' N)

DEPTHS IN METRES

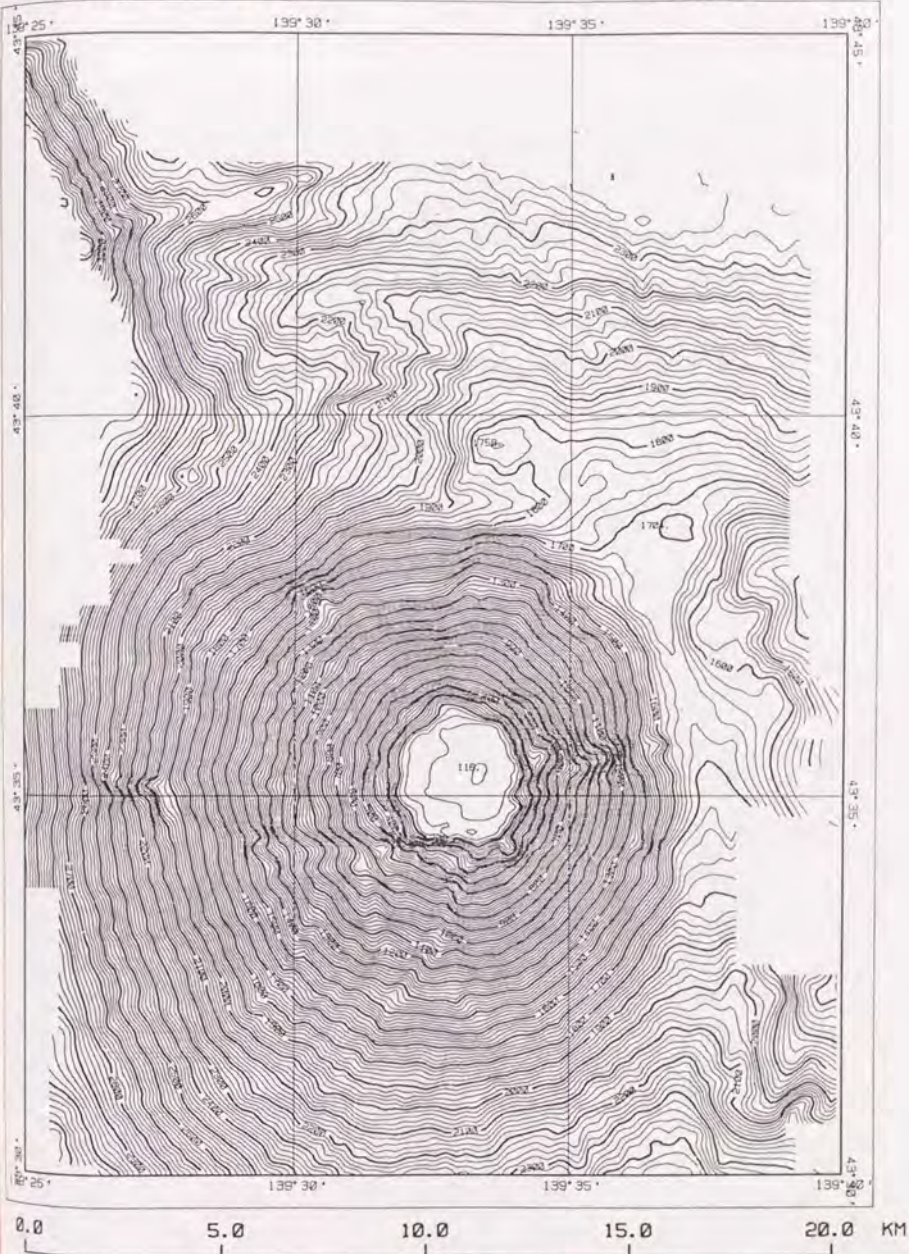
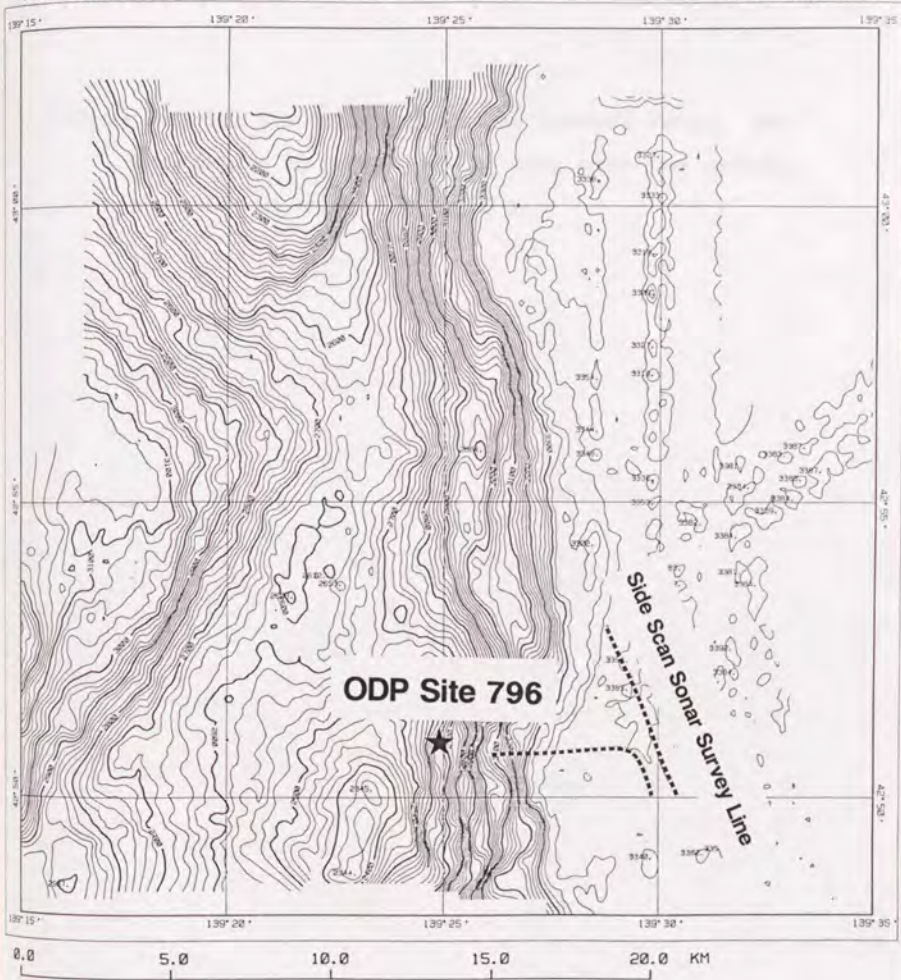


Figure II-4: Seabeam map of the southern box in Figure II-1, southern Okushiri Ridge to the Shiribeshi Trough. Dashed line shows the track line of side scan sonar survey. A marked point (star mark) is a drilling site of the ODP Site 796.

MERCATOR PROJECTION
(1/100000 AT 43° 30' N)

SEABEAM MAP

DEPTHS IN METRES



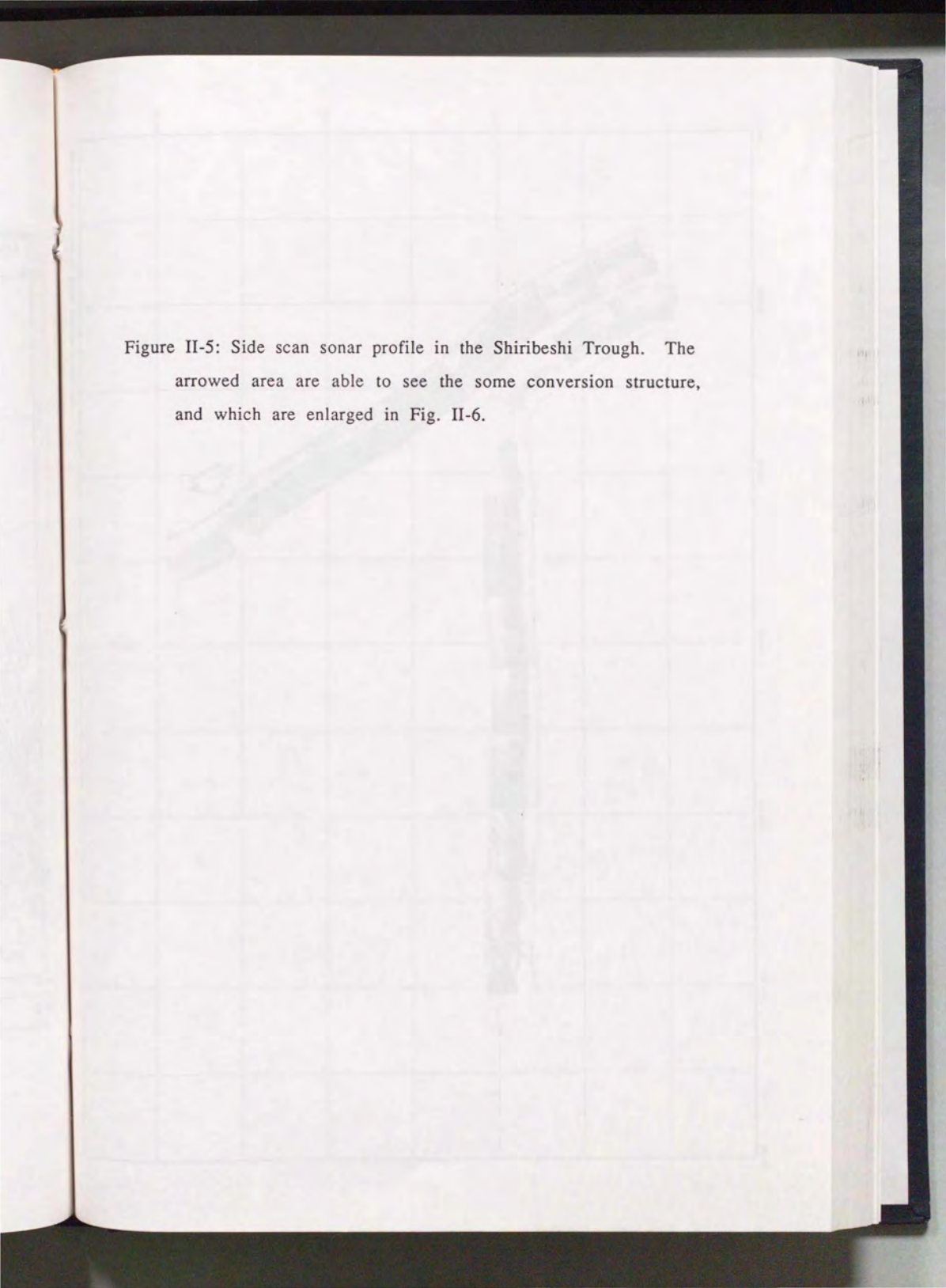


Figure II-5: Side scan sonar profile in the Shiribeshi Trough. The
arrowed area are able to see the some conversion structure,
and which are enlarged in Fig. II-6.

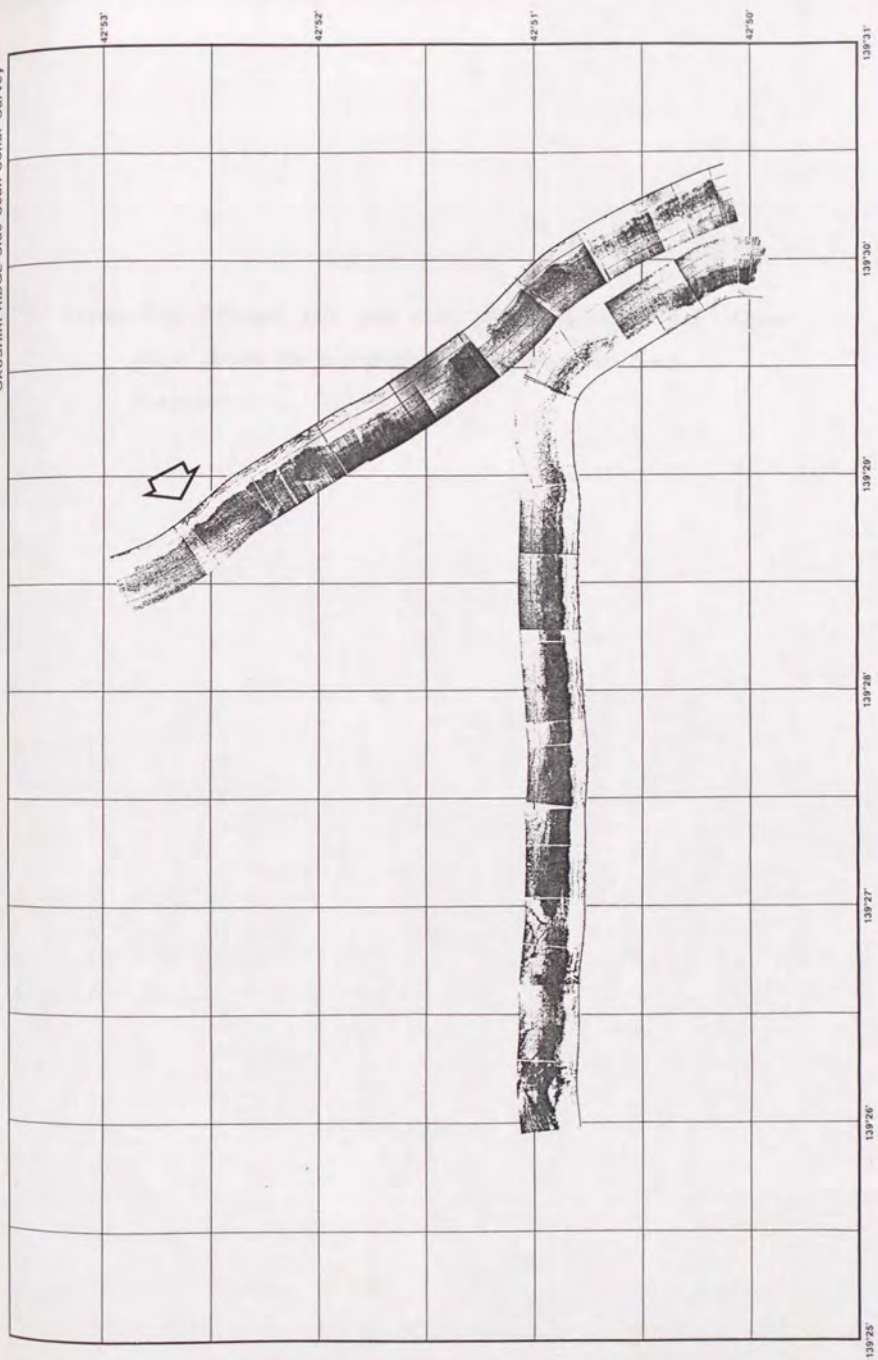


Figure II-6: Enlarged side scan sonar profile of Figure II-5. Open arrow shows the topographic bulge (note the black lineation).

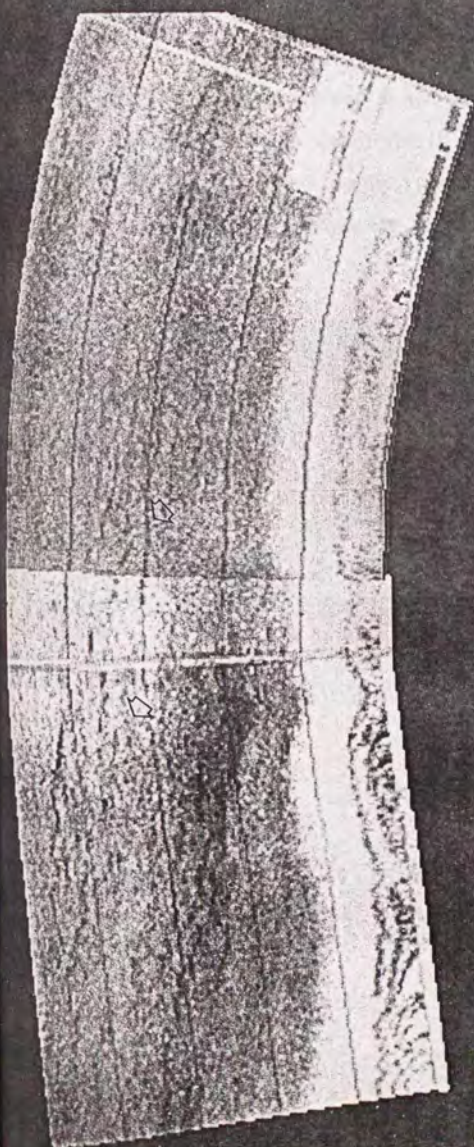
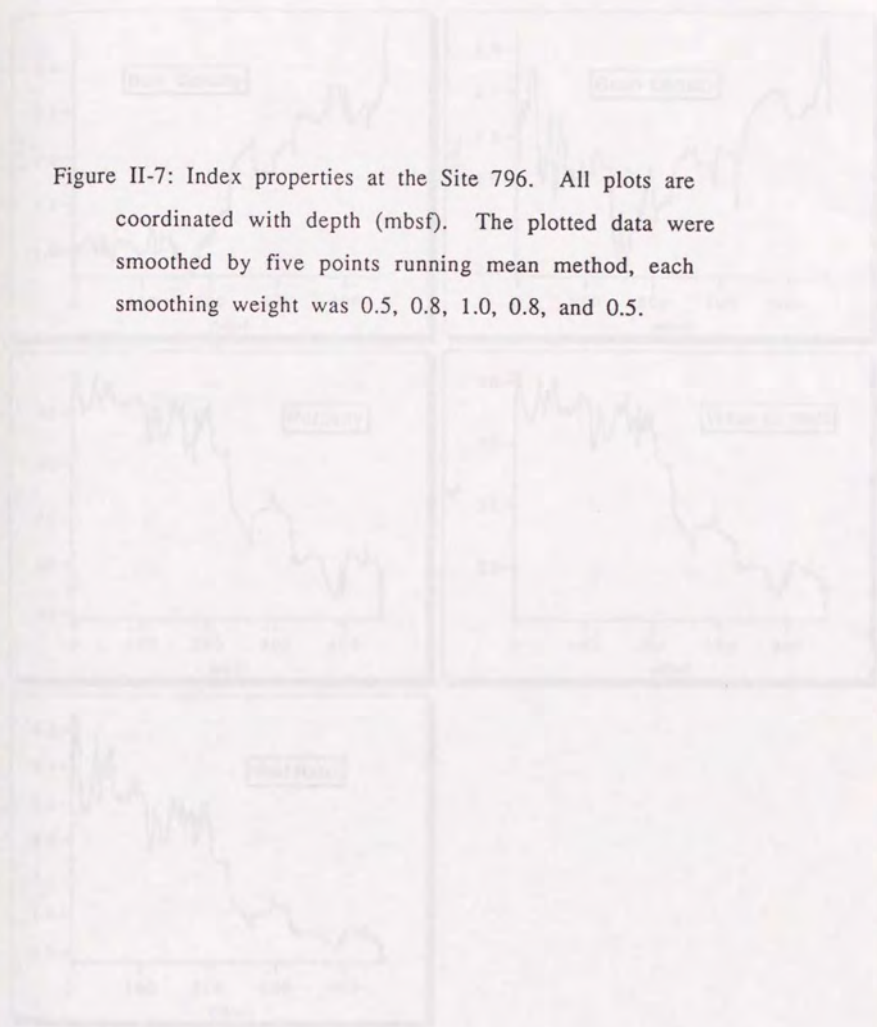


Figure II-7: Index properties at the Site 796. All plots are coordinated with depth (mbsf). The plotted data were smoothed by five points running mean method, each smoothing weight was 0.5, 0.8, 1.0, 0.8, and 0.5.



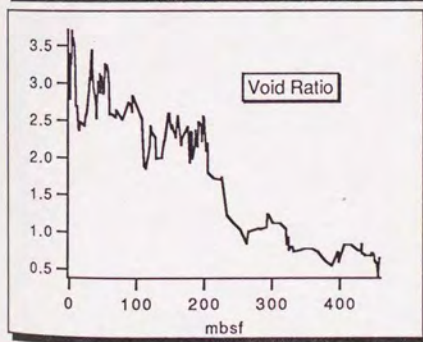
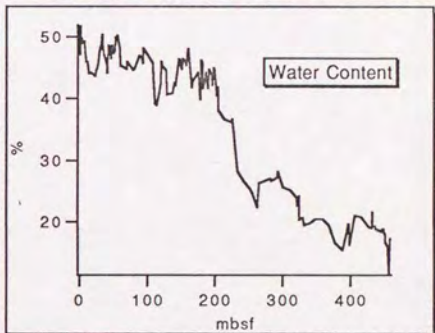
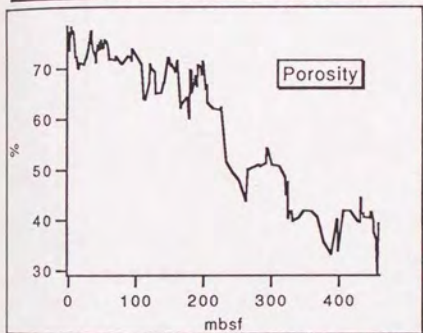
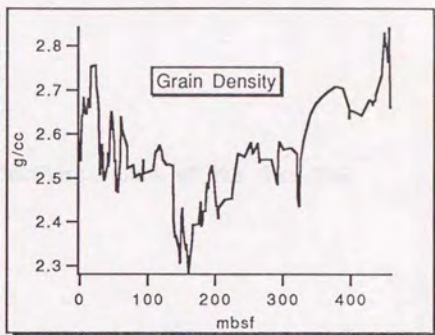
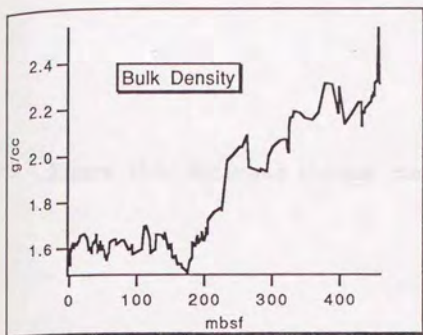
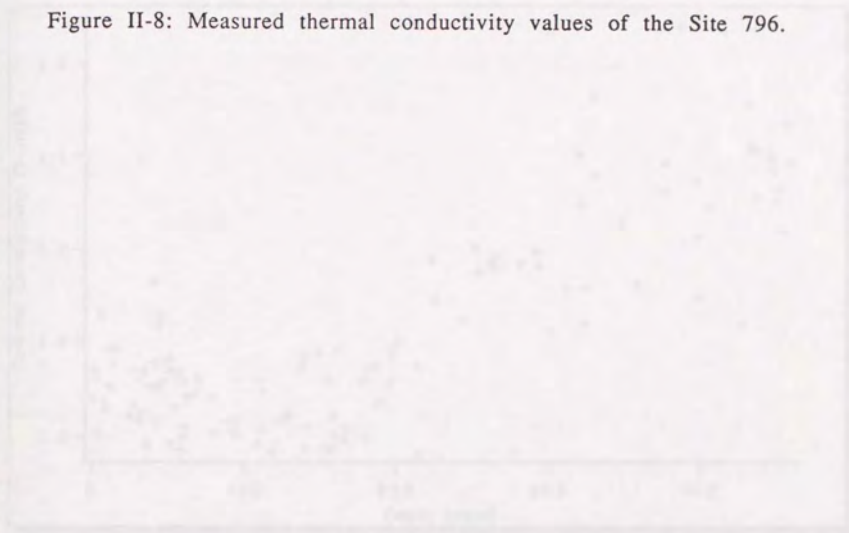


Figure II-8: Measured thermal conductivity values of the Site 796.



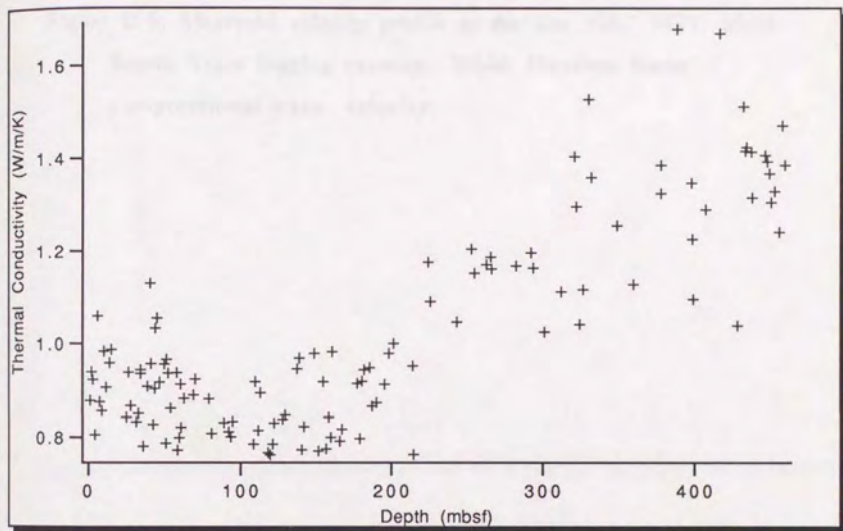
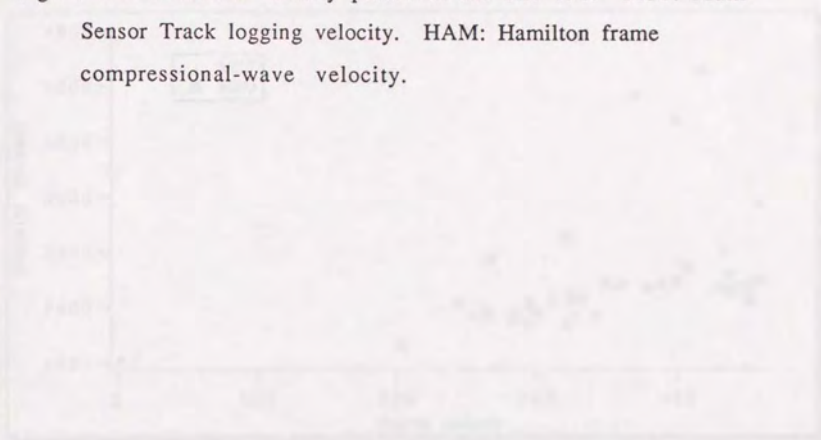


Figure II-9: Measured velocity profile at the Site 796. MST: Multi-Sensor Track logging velocity. HAM: Hamilton frame compressional-wave velocity.



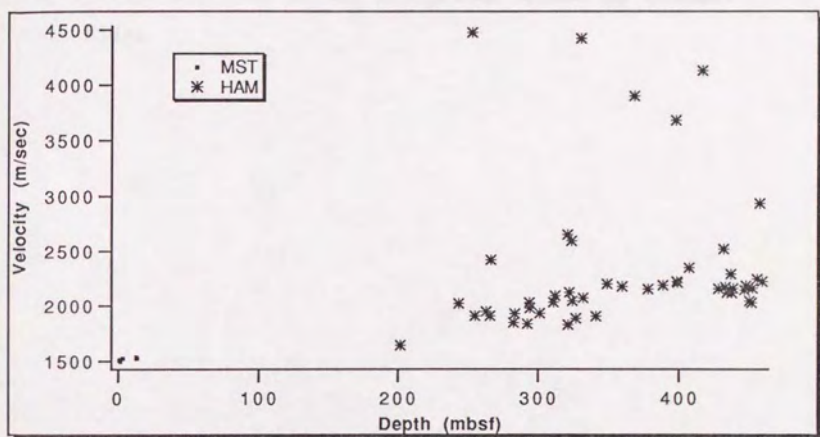
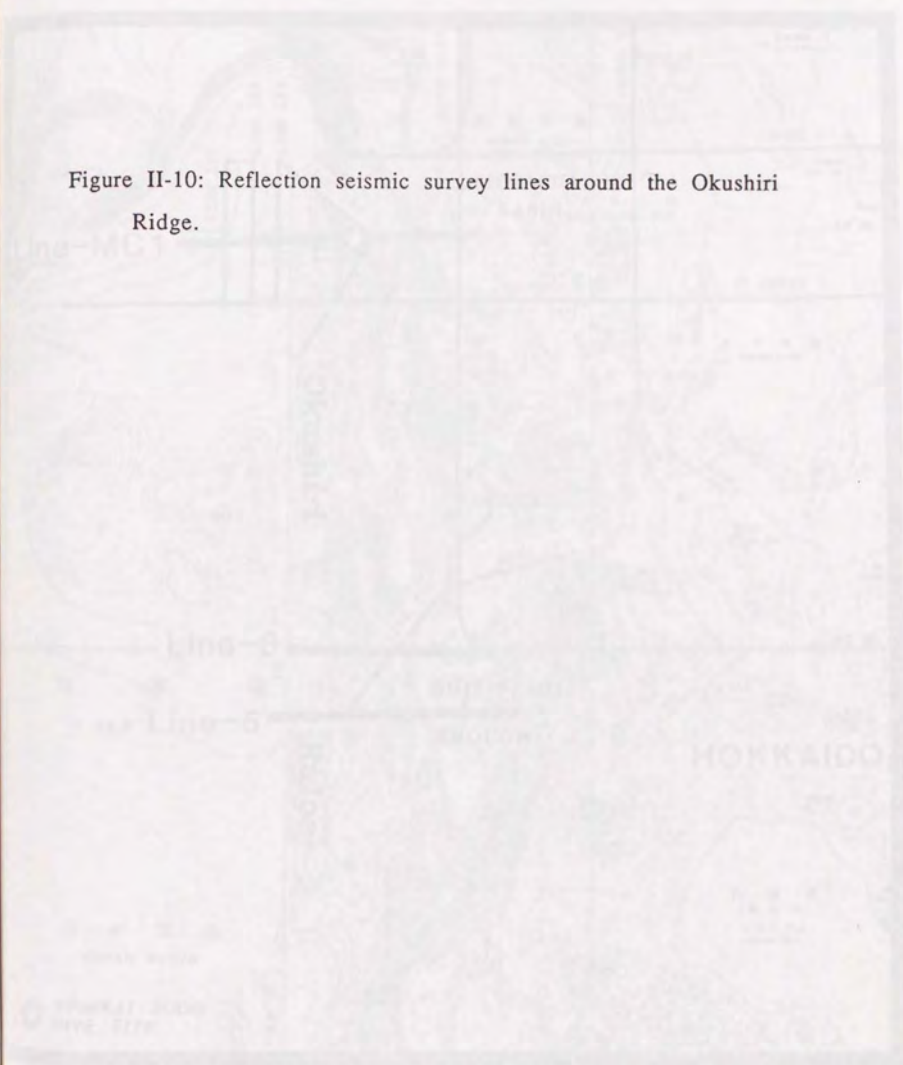


Figure II-10: Reflection seismic survey lines around the Okushiri Ridge.



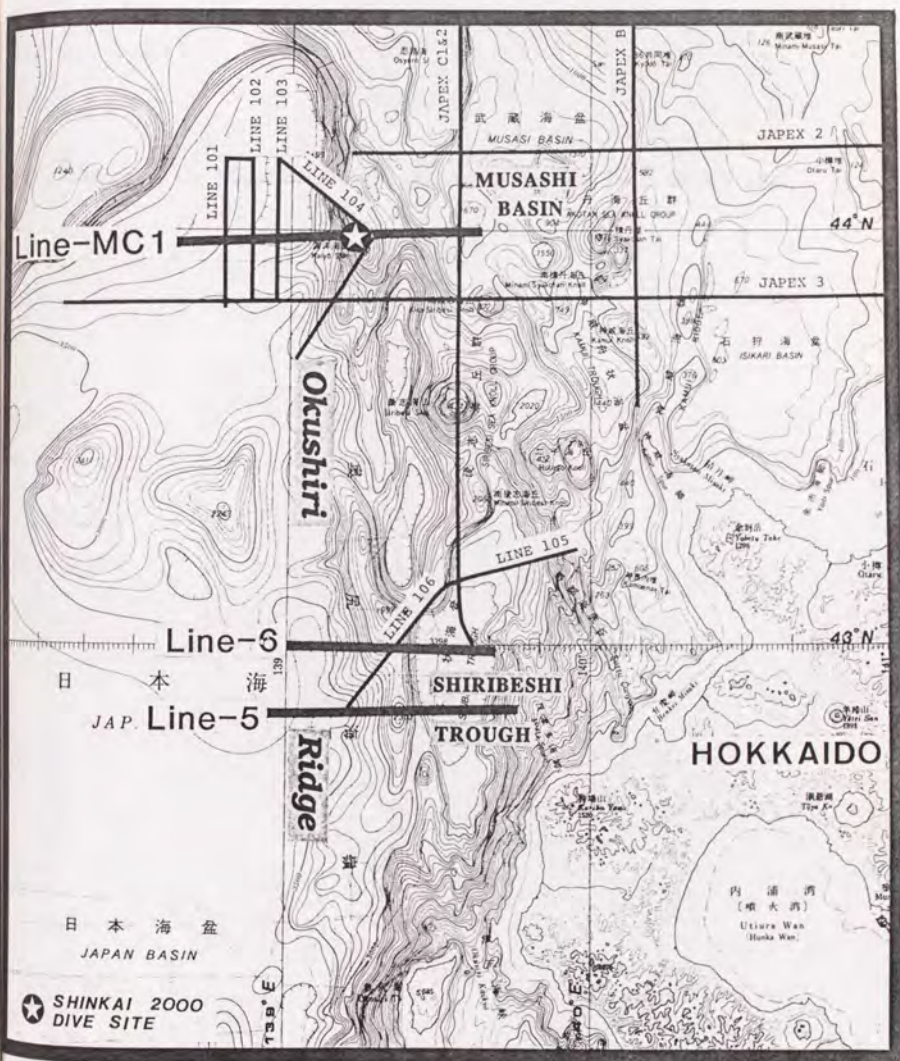


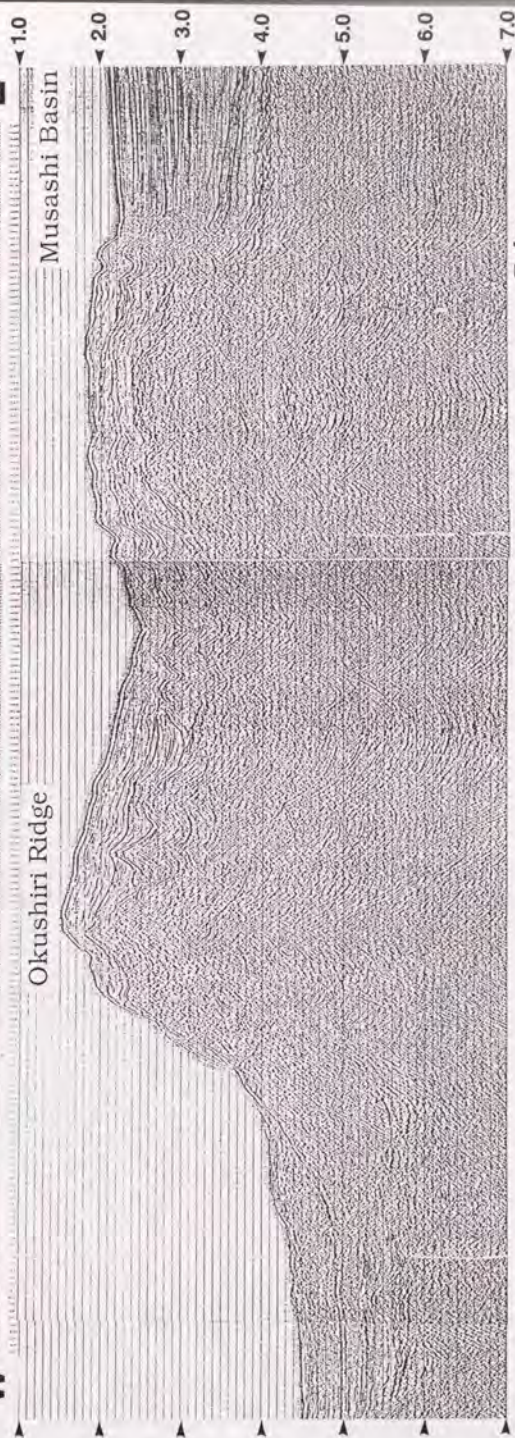
Figure II-11: Migrated seismic profile of the line MC1 of KT-87-6.

W

Okushiri Ridge

E

Musashi Basin



5 km

Figure II-12: Interpreted seismic profile of the MC1. M: Main thrust. B: Back thrusting.

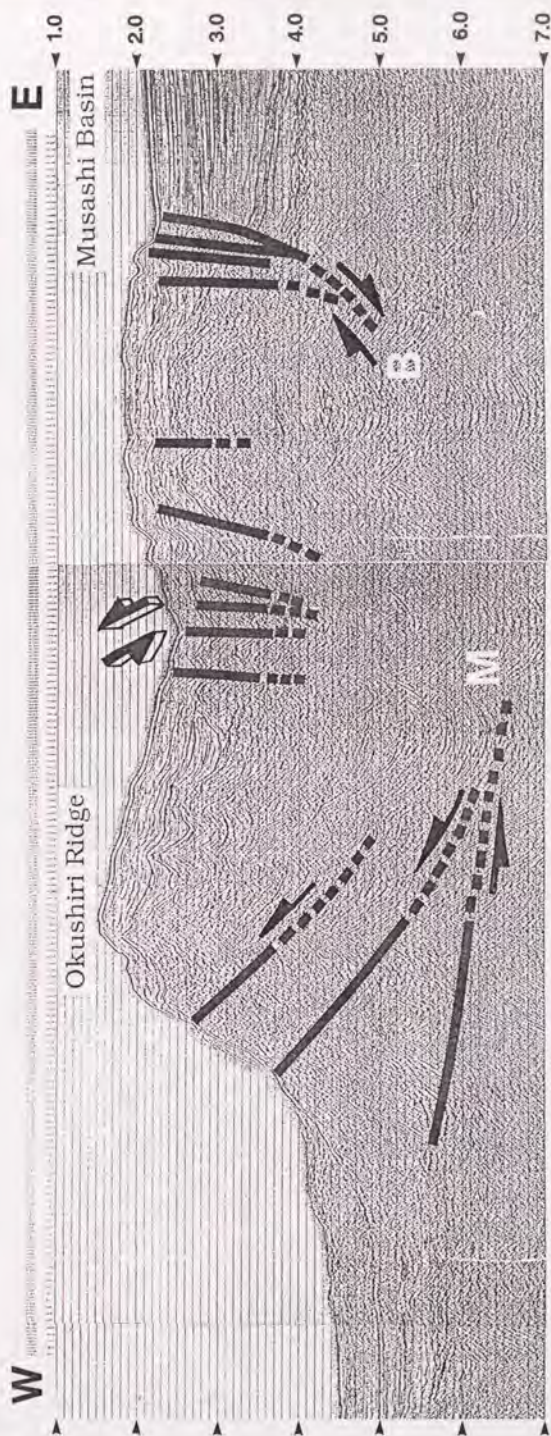


Figure II-13: Migrated seismic profile of the line-5 of KH-86-2.

W

E



5 km

Figure II-14: Interpreted seismic profile of the line-5.

W

E

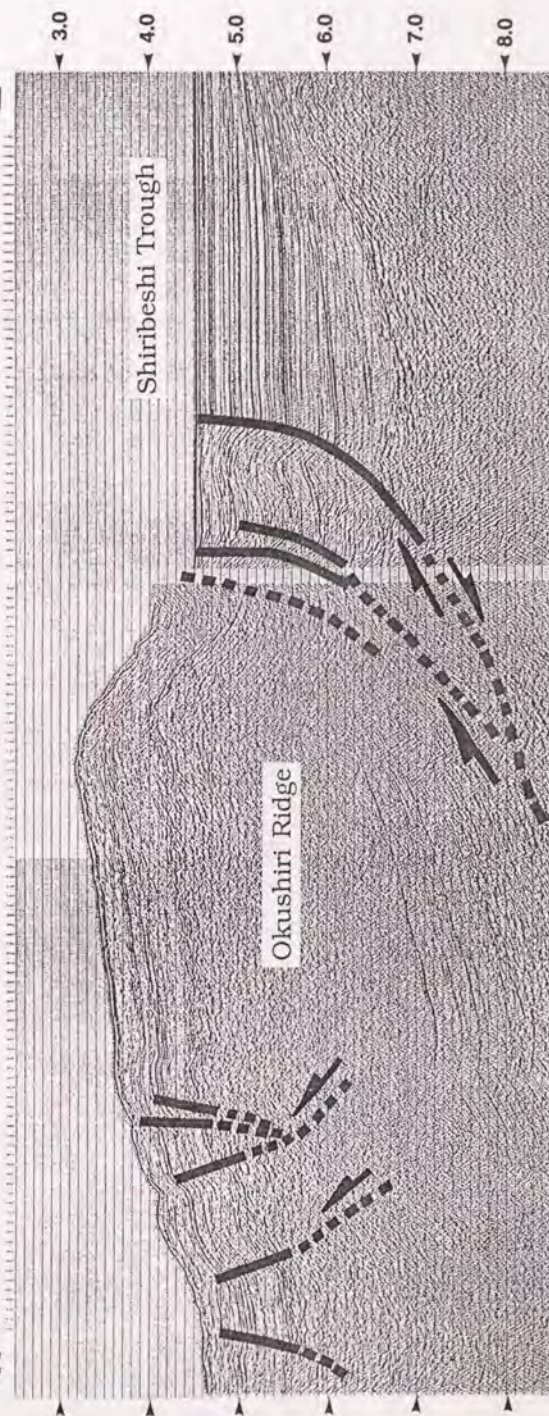


Figure II-15: Migrated seismic profile of the line-6 of KH-86-2.

W

E



5 km

Figure II-16: Interpreted seismic profile of the line-6.

W

E

3.0
4.0
5.0
6.0
7.0
8.0

Shiribeshi Trough

Okushiri Ridge

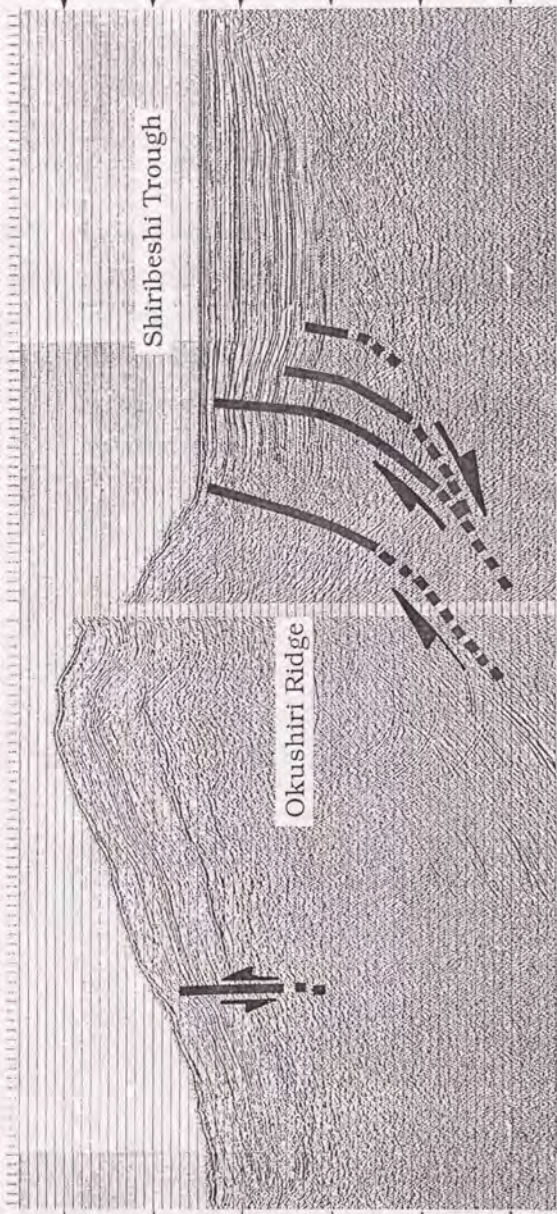
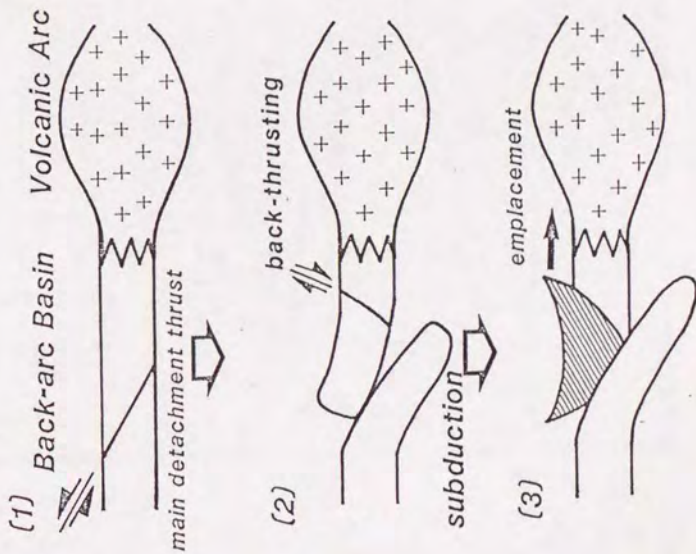


Figure II-17: Cartoons showing the ways of ophiolite emplacement in nascent back-arc closing. Both subduction and obduction types are relating to the back-thrusting and making ophiolite blocks. Both types will go to a same convergent style. Then the back-arc basin may close. The hatched parts are ophiolite blocks.

Subduction w/ back-thrusting



Subduction w/ back-thrusting



Obduction

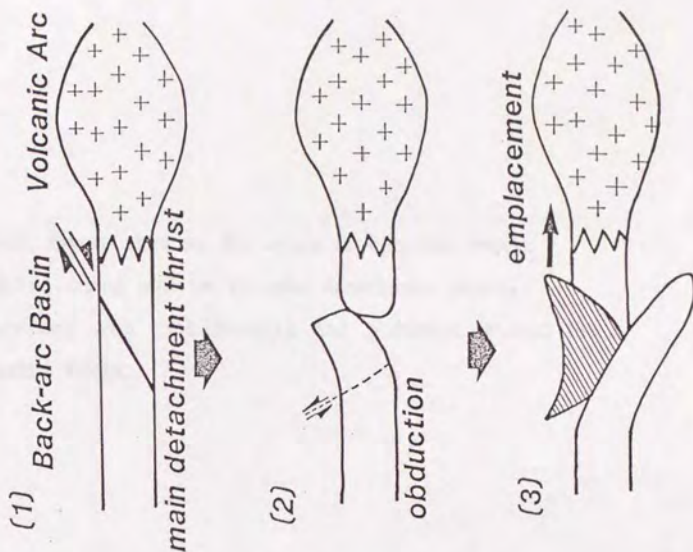
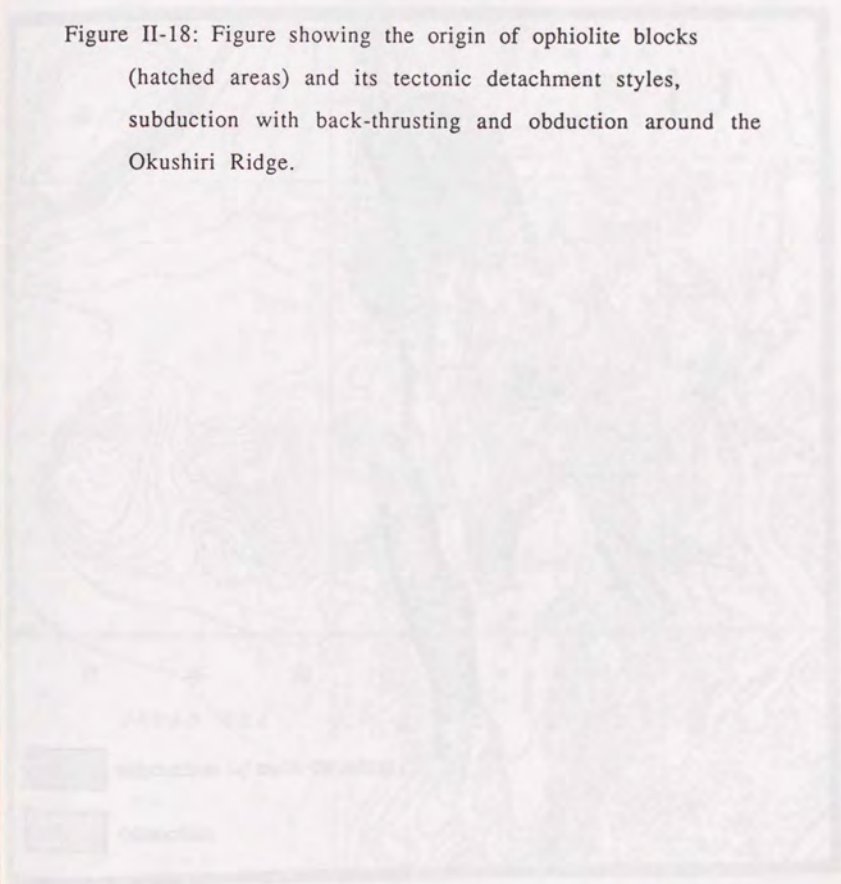
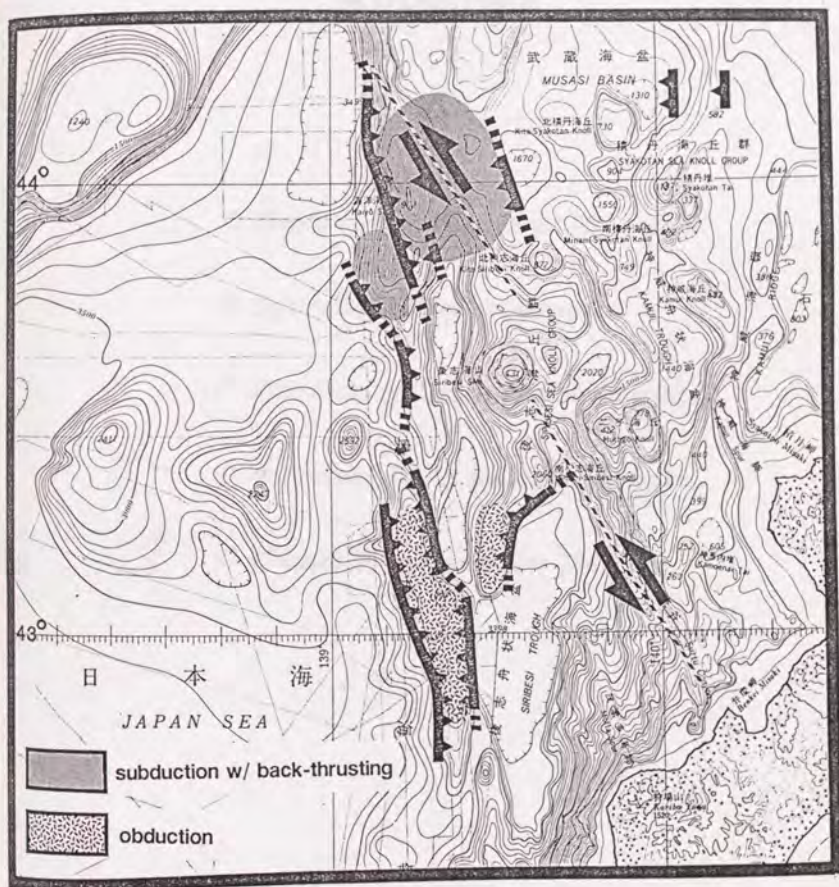


Figure II-18: Figure showing the origin of ophiolite blocks (hatched areas) and its tectonic detachment styles, subduction with back-thrusting and obduction around the Okushiri Ridge.





Appendix

A: Physical Properties in Sites 794 and 797

B: Synthetic Seismogram Program

C: Raw Data of Temperature Estimation

D: Isothermal Depth Estimation Program

E: Physical Properties in Site 796

OSP Physical Properties

Site 794

Depth	Water Density	Grain Density	Porosity	Water Content	Void Ratio
10	1.00	2.65	0.40	0.40	1.00
20	1.00	2.71	0.36	0.36	0.90
30	1.00	2.81	0.30	0.30	0.78
40	1.00	2.87	0.24	0.24	0.65
50	1.00	2.93	0.18	0.18	0.50
60	1.00	2.97	0.13	0.13	0.38
70	1.00	3.01	0.09	0.09	0.27
80	1.00	3.04	0.06	0.06	0.18
90	1.00	3.07	0.04	0.04	0.12
100	1.00	3.09	0.03	0.03	0.08
110	1.00	3.11	0.02	0.02	0.05
120	1.00	3.12	0.01	0.01	0.03
130	1.00	3.13	0.01	0.01	0.02
140	1.00	3.14	0.01	0.01	0.01
150	1.00	3.15	0.01	0.01	0.01
160	1.00	3.16	0.01	0.01	0.01
170	1.00	3.17	0.01	0.01	0.01
180	1.00	3.18	0.01	0.01	0.01
190	1.00	3.19	0.01	0.01	0.01
200	1.00	3.20	0.01	0.01	0.01
210	1.00	3.21	0.01	0.01	0.01
220	1.00	3.22	0.01	0.01	0.01
230	1.00	3.23	0.01	0.01	0.01
240	1.00	3.24	0.01	0.01	0.01
250	1.00	3.25	0.01	0.01	0.01
260	1.00	3.26	0.01	0.01	0.01
270	1.00	3.27	0.01	0.01	0.01
280	1.00	3.28	0.01	0.01	0.01
290	1.00	3.29	0.01	0.01	0.01
300	1.00	3.30	0.01	0.01	0.01
310	1.00	3.31	0.01	0.01	0.01
320	1.00	3.32	0.01	0.01	0.01
330	1.00	3.33	0.01	0.01	0.01
340	1.00	3.34	0.01	0.01	0.01
350	1.00	3.35	0.01	0.01	0.01
360	1.00	3.36	0.01	0.01	0.01
370	1.00	3.37	0.01	0.01	0.01
380	1.00	3.38	0.01	0.01	0.01
390	1.00	3.39	0.01	0.01	0.01
400	1.00	3.40	0.01	0.01	0.01
410	1.00	3.41	0.01	0.01	0.01
420	1.00	3.42	0.01	0.01	0.01
430	1.00	3.43	0.01	0.01	0.01
440	1.00	3.44	0.01	0.01	0.01
450	1.00	3.45	0.01	0.01	0.01
460	1.00	3.46	0.01	0.01	0.01
470	1.00	3.47	0.01	0.01	0.01
480	1.00	3.48	0.01	0.01	0.01
490	1.00	3.49	0.01	0.01	0.01
500	1.00	3.50	0.01	0.01	0.01

Appendix

A: Physical Properties in Sites 794 and 797

ODP Physical Properties

Site 794

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
1.0	1.34	2.71	84.50	64.60	5.47
2.5	1.45	2.77	79.40	56.10	3.85
4.0	1.33	2.59	80.50	62.01	4.14
5.5	1.29	2.35	82.30	65.36	4.64
6.5	1.46	2.78	69.80	48.98	2.31
7.8	1.42	2.59	77.70	56.06	3.49
9.3	1.44	2.90	83.80	59.62	5.17
10.8	1.32	2.89	85.80	66.59	6.05
12.3	1.44	2.66	78.90	56.13	3.74
13.8	1.62	2.89	70.10	44.33	2.35
15.3	1.50	2.09	74.50	50.88	2.93
16.3	1.37	4.60	84.50	63.19	5.47
17.3	1.39	2.86	80.50	59.33	4.13
18.8	1.47	2.50	77.80	54.22	3.50
20.3	1.48	2.66	77.60	53.72	3.47
21.8	1.44	2.83	83.50	59.41	5.06
23.3	1.48	2.79	79.10	54.76	3.79
24.8	1.59	2.65	68.00	43.82	2.12
25.7	1.50	2.54	74.10	50.61	2.86
26.8	1.63	2.78	67.90	42.68	2.11
28.3	1.49	2.48	77.90	53.56	3.53
29.8	1.45	2.35	78.90	55.75	3.75
31.3	1.42	2.61	82.80	59.74	4.83
32.8	1.59	2.87	76.00	48.97	3.17
34.3	1.54	2.82	72.70	48.36	2.67
35.1	1.62	2.69	69.80	44.14	2.31
36.3	1.42	2.62	77.60	55.99	3.47
37.8	2.15	3.38	64.00	30.50	1.78
39.3	1.60	2.70	70.90	45.40	2.44
40.8	1.46	2.69	81.20	56.98	4.32
42.3	1.49	2.72	79.70	54.80	3.92
43.8	1.41	2.62	80.40	58.42	4.10
45.8	1.37	2.40	82.50	61.69	4.70
47.3	1.53	2.96	85.30	57.12	5.81
48.8	1.45	2.80	82.70	58.43	4.77
50.3	1.44	2.68	85.40	60.76	5.87
51.8	1.52	2.65	78.30	52.78	3.60
53.3	1.57	2.92	76.10	49.66	3.19
54.3	1.69	2.68	63.20	38.31	1.72
55.3	1.74	2.62	60.30	35.50	1.52
56.8	1.62	2.69	72.00	45.53	2.57
58.3	1.74	2.75	66.60	39.21	1.99
59.8	1.48	2.50	75.00	51.92	2.99

ODP Physical Properties

Site 794

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
61.3	1.44	2.56	81.80	58.20	4.50
62.8	1.54	2.76	74.60	49.63	2.94
63.8	1.48	2.62	80.10	55.45	4.03
64.8	1.43	2.47	78.80	56.45	3.71
66.3	1.48	2.71	74.80	51.78	2.97
67.8	1.45	2.70	80.80	57.09	4.21
69.3	1.60	2.46	74.90	47.96	2.99
70.8	1.41	2.59	81.70	59.36	4.48
72.3	1.48	2.70	76.90	53.23	3.34
74.3	1.38	2.56	79.90	59.32	3.97
75.8	1.47	2.61	79.90	55.69	3.97
77.3	1.59	2.57	82.70	53.29	4.78
78.8	1.42	2.47	79.80	57.57	3.96
80.3	1.30	2.37	81.30	64.07	4.36
81.8	1.33	2.41	80.40	61.93	4.09
83.8	1.39	2.85	85.10	62.72	5.72
85.3	1.44	2.23	84.00	59.76	5.26
86.8	1.38	2.62	81.20	60.28	4.33
88.3	1.40	2.27	83.50	61.10	5.06
89.8	1.44	2.57	82.90	58.98	4.84
91.3	1.43	2.65	80.30	57.53	4.07
93.3	1.41	2.21	85.20	61.91	5.74
94.8	1.40	2.46	83.60	61.18	5.11
96.3	1.42	2.54	85.80	61.90	6.06
97.8	1.39	2.56	85.50	63.02	5.89
99.3	1.40	2.84	86.60	63.37	6.45
100.8	1.34	1.94	80.40	61.47	4.10
102.8	1.39	2.68	84.30	62.13	5.36
104.3	1.37	2.53	84.00	62.82	5.26
105.8	1.39	2.49	86.80	63.98	6.59
107.3	1.50	2.69	80.40	54.91	4.10
108.8	1.34	2.43	83.10	63.53	4.93
110.3	1.41	2.31	83.30	60.53	5.00
111.0	1.35	2.36	82.60	62.68	4.76
112.3	1.32	2.46	84.00	65.20	5.26
113.8	1.40	2.48	83.10	60.81	4.91
115.3	1.37	2.46	84.80	63.41	5.57
116.8	1.42	2.68	82.20	59.31	4.63
118.3	1.36	2.33	82.90	62.45	4.83
119.8	1.56	2.88	77.90	51.16	3.52
120.7	1.47	2.37	83.00	57.85	4.90
121.8	1.51	2.54	78.00	52.92	3.55
123.3	1.49	2.67	78.50	53.98	3.65

ODP Physical Properties

Site 794

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
124.8	1.44	2.68	81.00	57.63	4.28
126.3	1.56	2.74	71.90	47.22	2.56
127.8	1.40	2.55	80.20	58.69	4.06
129.3	1.51	2.76	80.10	54.35	4.03
130.0	1.56	2.43	76.40	50.17	3.24
131.3	1.55	2.60	74.20	49.04	2.88
132.8	1.31	2.23	82.80	64.75	4.80
134.3	1.38	2.48	80.80	59.99	4.21
135.8	1.51	3.04	89.10	60.45	8.18
137.3	1.39	2.28	83.00	61.18	4.87
138.8	1.36	2.44	81.40	61.32	4.38
139.9	1.36	2.83	84.10	63.35	5.30
140.8	1.43	3.10	90.00	64.48	8.95
142.3	1.44	2.99	86.80	61.75	6.56
143.8	1.36	2.08	87.60	65.99	7.08
145.3	1.34	2.51	85.30	65.22	5.79
146.8	1.40	2.49	90.30	66.08	9.30
148.3	1.40	2.88	94.00	68.79	15.60
150.5	1.33	2.45	76.10	58.62	3.18
152.0	1.37	1.89	88.70	66.33	7.86
153.5	1.39	2.71	88.80	65.45	7.93
155.0	1.34	2.48	86.90	66.44	6.65
155.4	1.30	2.29	85.60	67.46	5.92
156.5	1.37	2.04	86.70	64.84	6.52
156.9	1.30	2.32	86.00	67.77	6.15
157.9	1.28	2.39	87.40	69.95	6.91
158.0	1.28	2.28	83.10	66.51	4.92
158.8	1.37	2.98	86.80	64.91	6.56
164.5	2.89	3.10	29.50	10.46	0.42
165.0	1.32	2.36	83.30	64.65	4.99
169.5	1.32	1.95	80.10	62.17	4.03
171.0	1.41	2.23	87.20	63.36	6.80
172.5	1.38	2.57	86.00	63.85	6.14
174.0	1.37	2.34	87.00	65.06	6.68
175.5	1.42	2.58	89.20	64.36	8.26
179.2	1.32	1.69	82.20	63.80	4.63
180.7	1.37	2.24	84.70	63.34	5.52
182.2	1.43	2.79	85.20	61.04	5.76
183.7	1.40	2.97	85.10	62.27	5.71
185.2	1.36	2.48	85.40	64.33	5.84
186.7	1.43	2.29	84.10	60.25	5.28
187.5	1.43	2.67	88.60	63.48	7.73
189.0	1.31	2.41	83.50	65.30	5.04

ODP Physical Properties

Site 794

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
190.5	1.38	2.61	83.80	62.21	5.16
192.0	1.31	2.33	82.20	64.29	4.62
193.5	1.30	2.29	78.00	61.47	3.55
194.7	1.35	2.57	87.30	66.25	6.90
198.6	1.32	2.11	82.40	63.95	4.68
200.1	1.36	2.32	84.50	63.65	5.45
201.6	1.33	2.35	85.50	65.86	5.88
203.1	1.37	2.45	87.70	65.58	7.10
204.6	1.27	2.30	79.00	63.73	3.76
206.1	1.34	2.17	82.10	62.77	4.58
208.2	1.37	2.30	86.00	64.31	6.16
209.7	1.33	2.55	88.30	68.02	7.55
211.2	1.37	2.51	85.30	63.79	5.82
212.7	1.30	2.21	85.60	67.46	5.92
213.2	1.34	2.53	84.40	64.53	5.40
214.2	1.27	1.99	84.30	68.00	5.37
214.7	1.32	2.36	84.60	65.66	5.51
215.7	1.37	2.49	83.30	62.29	5.00
216.2	1.32	2.38	86.80	67.37	6.59
217.7	1.29	2.22	87.20	69.25	6.82
222.9	1.31	2.46	87.10	68.12	6.77
227.5	1.27	2.36	87.20	70.34	6.81
229.0	1.27	2.30	87.20	70.34	6.83
230.5	1.27	2.38	85.70	69.13	5.98
232.0	1.27	2.13	87.70	70.75	7.12
232.8	1.89	2.91	59.90	32.47	1.50
233.5	1.25	2.28	87.10	71.39	6.75
237.2	1.35	2.54	90.60	68.76	9.69
238.7	1.30	2.54	87.00	68.56	6.68
240.2	1.26	2.48	85.20	69.28	5.77
241.7	1.36	2.77	89.10	67.12	8.14
243.2	1.30	2.01	87.90	69.27	7.29
244.7	1.34	2.29	85.10	65.06	5.70
247.0	1.26	2.27	86.20	70.09	6.25
248.5	1.31	2.14	85.20	66.63	5.75
250.0	1.30	2.43	88.40	69.67	7.64
251.5	1.32	2.32	90.30	70.09	9.28
253.0	1.35	2.79	89.90	68.22	8.86
254.5	1.25	2.41	86.30	70.73	6.31
256.7	1.32	2.42	87.40	67.83	6.96
257.9	1.30	2.36	88.40	69.67	7.63
266.2	1.34	2.23	86.90	66.44	6.66
267.7	1.32	2.33	86.40	67.06	6.37

ODP Physical Properties

Site 794

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
269.2	1.44	2.72	85.70	60.97	6.00
270.7	1.34	2.57	86.80	66.36	6.60
272.2	1.35	2.53	81.80	62.08	4.51
273.7	1.31	1.90	89.80	70.23	8.81
273.9	1.31	1.90	89.80	70.23	8.81
276.1	1.28	2.49	85.70	68.59	5.97
277.6	1.30	2.53	88.70	69.90	7.82
279.1	1.38	2.20	84.60	62.81	5.50
280.6	1.40	2.80	87.10	63.74	6.73
282.1	1.43	2.91	86.60	62.04	6.49
285.6	1.32	2.29	86.00	66.75	6.16
287.1	1.28	2.08	85.90	68.75	6.08
288.6	1.33	2.76	88.80	68.40	7.93
290.1	1.33	2.56	88.50	68.17	7.71
291.6	1.36	2.86	89.40	67.35	8.47
293.1	1.32	2.23	82.40	63.95	4.70
294.5	1.37	2.61	80.50	60.20	4.12
296.0	1.47	2.59	80.50	56.10	4.12
297.5	1.52	2.57	74.40	50.15	2.91
304.3	1.50	2.70	75.80	51.77	3.13
305.8	1.65	2.68	69.00	42.84	2.23
307.3	1.64	2.80	74.30	46.41	2.89
308.8	1.61	2.84	75.50	48.04	3.09
310.3	1.72	2.78	72.90	43.42	2.69
311.8	1.62	2.54	66.70	42.18	2.00
312.6	1.67	2.65	73.20	44.91	2.73
313.9	2.03	3.11	61.80	31.19	1.62
315.2	1.72	2.77	70.40	41.93	2.38
315.8	1.71	2.64	71.60	42.90	2.53
323.2	1.61	2.32	66.10	42.06	1.95
324.7	1.68	2.58	68.10	41.53	2.14
326.2	1.66	2.51	69.00	42.58	2.23
327.7	1.67	2.60	72.10	44.23	2.58
329.2	1.59	2.52	72.30	46.59	2.61
330.7	1.56	2.51	69.90	45.91	2.32
331.4	1.56	2.64	74.50	48.93	2.92
332.9	1.42	2.72	77.60	55.99	3.47
334.4	1.51	2.51	72.50	49.19	2.64
335.9	1.56	2.49	68.70	45.12	2.19
337.4	1.63	2.46	69.00	43.37	2.22
338.4	1.65	2.68	69.40	43.09	2.26
339.3	1.58	2.43	69.70	45.19	2.30
340.8	1.58	2.50	72.50	47.01	2.63

ODP Physical Properties

Site 794

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
342.3	1.70	2.66	71.00	42.79	2.45
342.6	1.52	2.66	76.90	51.83	3.33
344.1	1.56	2.43	74.50	48.93	2.92
345.6	1.53	2.87	79.40	53.17	3.86
376.1	1.98	2.29	42.60	22.04	0.74
386.8	1.66	2.77	67.50	41.66	2.08
387.8	1.95	3.39	71.50	37.57	2.51
395.8	1.84	2.88	58.90	32.80	1.43
405.9	1.74	2.72	63.60	37.45	1.75
406.0	1.88	2.53	48.90	26.65	0.96
407.5	1.84	2.61	51.70	28.79	1.07
415.7	1.90	2.62	46.70	25.18	0.87
416.9	2.07	2.72	48.40	23.95	0.94
418.1	2.37	2.86	35.50	15.35	0.55
425.1	1.90	2.73	52.20	28.15	1.09
426.6	1.89	2.74	60.60	32.85	1.54
434.4	1.98	2.52	43.50	22.51	0.77
436.4	2.04	2.53	41.00	20.59	0.69
445.3	1.86	2.67	51.50	28.37	1.06
445.7	1.90	2.55	56.20	30.30	1.28
446.9	2.52	2.71	21.90	8.90	0.28
453.6	1.81	2.61	56.00	31.70	1.27
463.3	1.76	2.56	59.20	34.46	1.45
473.3	1.92	2.62	53.40	28.49	1.15
474.8	2.00	2.71	52.40	26.84	1.10
475.6	2.15	2.65	46.70	22.25	0.88
482.5	1.82	2.64	56.20	31.64	1.28
485.3	1.94	2.54	50.60	26.72	1.02
492.7	1.54	2.83	80.80	53.75	4.20
494.2	1.54	2.63	74.70	49.69	2.95
495.7	1.65	2.75	74.00	45.95	2.84
498.8	1.55	2.56	75.90	50.17	3.16
501.7	1.73	2.86	67.00	39.68	2.03
511.3	1.89	2.77	57.80	31.33	1.37
521.6	1.93	2.91	52.90	28.08	1.12
524.3	1.60	2.77	72.50	46.42	2.64
524.4	1.68	2.82	72.80	44.40	2.67
526.5	1.82	2.74	60.40	34.00	1.52
527.5	2.16	2.99	56.80	26.94	1.32
530.4	1.85	2.92	61.40	34.00	1.59
541.1	2.06	2.78	46.70	23.23	0.88
542.4	2.23	2.67	39.70	18.24	0.66
542.5	2.49	2.71	17.70	7.28	0.22

ODP Physical Properties

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Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
542.7	2.55	2.71	12.00	4.82	0.14
544.8	2.62	2.72	9.20	3.60	0.10
560.28	2.64	2.74	9.90	3.84	0.11
564.74	2.63	2.76	9.50	3.70	0.10
573.22	2.69	2.77	7.60	2.89	0.08
581.94	2.71	2.77	6.50	2.46	0.07
583.02	2.72	2.78	6.90	2.60	0.07
584.53	2.72	2.79	7.40	2.79	0.08
585.92	2.65	2.79	9.70	3.75	0.11
586.72	2.53	2.73	15.40	6.24	0.18
588.21	2.58	2.77	13.40	5.32	0.15
592.07	2.55	2.73	12.10	4.86	0.14
601.36	2.47	2.74	18.70	7.76	0.23
602.29	2.46	2.76	20.60	8.58	0.26
605.12	2.56	2.76	14.40	5.76	0.17
615.91	2.48	2.73	18.20	7.52	0.22
624.00	2.54	2.77	16.20	6.53	0.19
625.32	2.56	2.77	16.10	6.44	0.19
627.80	2.57	2.79	14.20	5.66	0.17
628.95	2.55	2.77	16.00	6.43	0.19
634.55	2.48	2.73	17.70	7.31	0.21
635.34	2.52	2.79	19.00	7.72	0.23
637.06	2.57	2.82	19.00	7.57	0.23
637.89	2.52	2.81	20.70	8.42	0.26
639.53	2.60	2.81	15.30	6.03	0.18
641.58	2.54	2.78	18.20	7.34	0.22
642.96	2.46	2.72	19.00	7.91	0.23
643.21	2.44	2.73	20.10	8.44	0.25
643.91	2.47	2.67	17.00	7.05	0.20
644.80	2.19	2.67	38.00	17.78	0.61
645.25	2.14	2.65	35.10	16.80	0.54
646.13	2.50	2.70	15.50	6.35	0.18

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
2.5	1.42	2.71	81.60	58.87	4.42
4.0	1.40	2.58	81.00	59.27	4.27
4.4	1.46	2.75	79.40	55.72	3.84
5.4	1.35	2.56	85.70	65.04	5.98
5.9	1.38	2.67	85.50	63.47	5.88
6.9	1.33	2.48	86.50	66.63	6.41
7.4	1.36	2.60	84.70	63.81	5.52
8.4	1.40	2.71	81.30	59.49	4.34
8.9	1.36	2.77	86.90	65.46	6.66
9.9	1.43	2.60	81.30	58.25	4.36
10.4	1.58	2.60	72.50	47.01	2.64
11.4	1.39	2.61	83.90	61.84	5.19
11.9	1.47	2.60	72.80	50.74	2.67
12.9	1.42	2.03	82.00	59.16	4.56
14.4	1.45	2.58	79.80	56.38	3.94
15.4	1.30	2.44	87.00	68.56	6.69
16.4	1.35	2.67	84.90	64.43	5.62
17.9	1.46	2.78	80.20	56.28	4.05
19.4	1.54	2.75	75.40	50.16	3.07
20.9	1.41	2.56	83.50	60.67	5.06
22.4	1.35	2.51	86.20	65.42	6.26
23.9	1.54	2.80	75.90	50.49	3.15
24.8	1.58	2.77	74.80	48.50	2.97
25.9	1.35	2.70	86.20	65.42	6.23
27.4	1.41	2.45	81.10	58.93	4.28
28.9	1.44	2.54	79.90	56.85	3.98
30.4	1.49	2.55	78.30	53.84	3.60
31.9	1.44	2.66	86.80	61.75	6.57
33.4	1.55	2.82	76.70	50.70	3.29
34.3	1.49	2.51	78.60	54.04	3.67
35.4	1.62	2.88	72.80	46.04	2.68
36.9	1.50	2.51	76.90	52.52	3.33
38.4	1.42	2.70	83.20	60.03	4.94
39.8	1.96	2.63	62.00	32.41	1.63
39.9	1.41	2.46	83.30	60.53	4.98
41.4	1.51	2.57	75.20	51.02	3.04
42.9	1.53	2.52	71.60	47.94	2.52
43.8	1.43	2.62	77.80	55.74	3.50
44.9	1.44	2.79	83.50	59.41	5.07
45.4	1.44	2.59	81.40	57.91	4.39
47.9	1.47	2.55	79.40	55.34	3.86
49.4	1.44	2.47	81.20	57.77	4.33
50.9	1.53	2.65	75.20	50.35	3.04

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
52.4	1.53	2.65	75.20	50.35	3.04
53.3	1.52	2.62	76.30	51.43	3.23
54.4	1.63	2.77	72.00	45.25	2.57
55.9	1.36	2.47	84.50	63.65	5.46
57.4	1.37	2.65	83.60	62.52	5.09
58.9	1.47	2.72	81.30	56.66	4.33
60.4	1.41	2.49	80.20	58.27	4.06
61.9	1.62	2.78	72.60	45.91	2.65
62.8	1.39	2.48	81.90	60.36	4.53
63.9	1.39	2.54	83.20	61.32	4.96
65.4	1.57	2.59	72.00	46.98	2.57
66.9	1.54	2.55	76.20	50.69	3.20
68.4	1.38	2.49	84.10	62.44	5.28
69.9	1.36	2.69	84.40	63.58	5.40
71.4	1.38	2.57	84.20	62.51	5.31
72.4	1.52	2.63	77.30	52.10	3.40
73.4	1.51	3.01	77.90	52.85	3.53
74.9	1.69	2.76	69.80	42.31	2.32
76.4	1.44	2.72	81.30	57.84	4.35
77.9	1.40	2.64	84.60	61.91	5.51
79.4	1.54	2.68	74.90	49.83	2.98
80.9	1.48	2.64	80.80	55.93	4.22
82.9	1.41	2.63	84.30	61.25	5.38
84.4	1.48	2.67	78.80	54.55	3.71
85.9	1.43	2.63	81.40	58.32	4.37
87.4	1.39	2.48	83.10	61.25	4.90
88.9	1.55	2.66	75.90	50.17	3.15
90.4	2.69	2.66	54.35	20.70	1.40
92.4	1.41	2.62	82.90	60.23	4.86
93.9	1.47	2.62	80.40	56.03	4.09
95.4	1.57	2.76	79.10	51.62	3.79
96.9	1.42	2.47	80.90	58.37	4.24
98.4	1.28	2.43	67.90	54.35	2.12
99.9	1.42	2.45	81.40	58.73	4.39
100.9	1.59	2.72	73.90	47.62	2.83
101.9	1.39	2.52	82.90	61.10	4.86
103.4	1.37	2.48	84.10	62.89	5.29
104.9	1.40	2.51	83.80	61.32	5.17
106.4	1.71	2.70	66.80	40.02	2.01
107.9	1.38	2.46	83.60	62.06	5.12
109.4	1.36	2.28	82.70	62.30	4.77
110.4	1.42	2.60	79.20	57.14	3.82
111.4	1.34	2.39	86.20	65.90	6.24

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
112.9	1.52	2.55	76.50	51.56	3.26
114.4	1.35	2.50	83.40	63.29	5.02
115.9	1.35	2.39	82.20	62.38	4.63
117.4	1.36	2.40	82.80	62.37	4.82
118.9	1.41	2.50	80.40	58.42	4.11
120.9	1.42	2.58	82.70	59.67	4.79
122.4	1.39	2.41	83.10	61.25	4.91
123.9	1.44	2.47	81.70	58.13	4.47
125.4	1.46	2.70	82.90	58.17	4.85
126.9	1.46	2.61	82.40	57.82	4.67
130.4	1.43	2.60	84.30	60.40	5.38
131.9	1.40	2.53	85.30	62.42	5.81
133.4	1.50	2.71	78.50	53.62	3.65
134.9	1.46	2.68	83.70	58.73	5.13
136.4	1.41	2.59	82.90	60.23	4.84
137.9	1.41	2.50	80.10	58.20	4.02
138.9	1.40	2.56	83.80	61.32	5.15
139.9	1.40	2.57	88.70	64.91	7.86
141.4	1.46	2.41	84.80	59.51	5.60
142.8	1.56	2.82	82.50	54.18	4.71
144.4	1.41	2.50	84.90	61.69	5.62
145.9	1.46	2.50	78.20	54.87	3.59
147.4	1.47	2.62	86.00	59.94	6.15
148.1	1.39	2.45	86.90	64.05	6.61
149.4	1.38	2.65	84.80	62.95	5.59
150.1	1.40	2.65	87.40	63.96	6.94
151.9	1.43	2.51	84.50	60.54	5.45
153.3	1.45	2.69	85.70	60.55	6.00
154.8	1.42	2.31	80.70	58.22	4.17
156.3	1.42	2.58	85.40	61.61	5.83
158.9	1.40	2.49	82.40	60.30	4.67
160.4	1.37	2.43	83.90	62.74	5.20
161.9	1.45	2.36	80.10	56.59	4.03
163.4	1.46	2.54	80.50	56.49	4.13
164.9	1.44	2.59	81.90	58.27	4.53
165.9	1.43	2.63	83.80	60.04	5.16
167.4	1.34	2.21	84.50	64.60	5.45
168.9	1.38	2.48	85.20	63.25	5.74
170.4	1.34	2.06	81.50	62.31	4.40
171.9	1.36	2.26	82.40	62.07	4.67
173.4	1.36	2.32	83.10	62.60	4.90
174.9	1.38	2.34	85.30	63.33	5.82
175.9	1.40	2.42	75.40	55.18	3.06

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
181.4	1.35	2.56	87.70	66.55	7.13
183.0	1.33	2.19	82.70	63.70	4.79
186.5	1.35	2.40	87.10	66.10	6.75
188.0	1.36	2.61	88.80	66.89	7.93
189.5	1.32	2.29	84.40	65.51	5.40
191.0	1.39	2.36	88.10	64.93	7.40
191.7	1.39	2.33	84.90	62.58	5.61
196.2	1.35	2.21	89.10	67.62	8.15
197.7	1.40	2.52	87.90	64.32	7.25
199.2	1.37	2.16	87.00	65.06	6.67
200.7	1.35	2.32	87.60	66.48	7.09
202.2	1.42	2.44	87.40	63.06	6.93
205.8	1.36	2.55	87.30	65.76	6.89
207.3	1.40	2.42	85.70	62.71	6.01
208.8	1.37	2.72	84.90	63.49	5.63
210.3	1.35	2.50	86.60	65.72	6.44
211.8	1.36	2.23	84.90	63.96	5.61
213.3	1.49	2.37	78.70	54.11	3.70
215.3	1.42	2.24	78.90	56.92	3.74
216.8	1.47	2.62	85.00	59.24	5.68
218.3	1.33	2.18	83.00	63.93	4.87
219.8	1.45	2.50	85.10	60.13	5.72
221.3	1.38	2.42	81.00	60.13	4.28
222.8	1.46	2.91	82.00	57.54	4.56
223.6	1.42	2.36	86.10	62.12	6.18
225.0	1.47	1.92	84.30	58.75	5.36
226.5	1.35	2.05	84.90	64.43	5.63
228.0	1.39	2.41	84.30	62.13	5.35
229.5	1.39	2.55	86.50	63.75	6.43
231.0	1.47	2.47	84.60	58.96	5.50
232.5	1.41	2.36	84.90	61.69	5.61
233.3	1.43	2.34	82.00	58.75	4.55
234.7	1.38	2.32	83.70	62.14	5.12
236.2	1.35	2.50	87.90	66.71	7.25
237.7	1.37	2.34	86.60	64.76	6.46
239.2	1.38	2.41	86.10	63.92	6.21
240.7	1.40	2.42	81.50	59.64	4.41
242.2	1.37	2.47	87.30	65.28	6.85
244.4	1.31	2.38	86.00	67.26	6.13
245.9	1.35	2.52	85.90	65.19	6.07
247.4	1.37	2.44	82.80	61.92	4.81
248.9	1.40	2.52	82.10	60.08	4.60
250.4	1.32	2.53	87.40	67.83	6.93

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
251.9	1.33	2.49	85.70	66.01	5.98
254.1	1.30	2.42	85.60	67.46	5.96
255.6	1.29	2.38	87.80	69.73	7.22
257.1	1.34	2.46	87.80	67.13	7.21
258.1	1.36	2.54	89.20	67.20	8.25
273.5	1.39	2.59	84.10	61.99	5.29
275.0	1.38	2.48	86.90	64.51	6.64
276.5	1.58	2.68	75.00	48.63	3.00
278.0	1.39	2.27	82.80	61.03	4.80
279.5	1.36	2.38	86.50	65.16	6.39
280.5	1.37	2.54	85.10	63.64	5.71
283.2	1.44	2.69	85.50	60.83	5.88
284.7	1.42	2.39	81.50	58.80	4.40
286.2	1.42	2.36	81.50	58.80	4.41
287.7	1.37	2.40	85.60	64.01	5.96
289.2	1.52	2.81	77.40	52.17	3.42
290.7	1.48	2.75	79.70	55.17	3.94
291.5	1.45	2.41	77.60	54.83	3.46
292.9	1.39	2.70	86.00	63.39	6.16
294.4	1.38	2.30	82.60	61.32	4.74
295.9	1.42	2.66	83.90	60.53	5.21
297.4	1.43	2.49	80.80	57.89	4.20
298.9	1.54	2.61	78.40	52.16	3.64
300.4	1.64	2.47	72.60	45.35	2.65
302.5	1.52	2.54	77.00	51.90	3.35
304.0	1.61	2.56	72.70	46.26	2.66
305.5	1.67	2.53	68.20	41.84	2.15
307.0	1.72	2.56	65.10	38.78	1.86
312.2	1.82	2.80	64.60	36.36	1.82
313.9	1.85	2.72	63.60	35.22	1.74
315.1	1.81	2.63	63.90	36.17	1.77
316.7	1.76	2.45	62.50	36.38	1.66
317.3	1.82	2.53	66.70	37.55	2.00
318.9	1.76	2.62	65.30	38.01	1.88
322.3	1.69	2.65	67.30	40.80	2.06
323.1	1.64	2.49	68.80	42.98	2.21
324.9	1.68	2.53	68.60	41.83	2.18
326.3	1.89	2.73	63.80	34.58	1.76
327.9	1.64	2.76	65.30	40.79	1.88
340.8	1.76	2.51	65.00	37.84	1.86
342.5	1.75	2.49	66.60	38.99	1.99
344.0	1.77	2.82	74.50	43.12	2.92
345.7	1.73	2.75	72.30	42.82	2.61

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
347.0	1.67	2.55	66.90	41.04	2.02
351.0	1.63	2.67	68.00	42.74	2.13
351.3	2.10	2.37	35.50	17.32	0.55
360.4	1.89	2.38	50.70	27.48	1.03
369.6	1.64	2.64	61.60	38.48	1.61
371.0	1.83	2.58	71.40	39.97	2.49
379.1	1.77	2.61	64.80	37.51	1.84
388.4	1.90	2.30	47.40	25.56	0.90
397.6	2.38	2.77	32.40	13.95	0.48
407.6	1.96	2.31	37.50	19.60	0.60
427.0	1.88	2.44	59.30	32.32	1.46
428.0	1.91	2.52	51.90	27.84	1.08
437.3	1.87	2.62	61.60	33.75	1.60
438.3	1.87	3.19	59.70	32.71	1.48
439.5	1.81	2.51	61.60	34.87	1.61
441.7	1.83	2.60	61.80	34.60	1.62
443.2	2.02	2.57	46.20	23.43	0.86
443.6	1.66	2.44	78.40	48.39	3.64
446.9	1.85	2.66	54.60	30.24	1.20
448.4	1.86	2.62	53.10	29.25	1.13
449.9	1.92	2.74	55.10	29.40	1.23
451.7	1.89	2.61	61.10	33.12	1.57
452.4	1.94	2.56	52.50	27.72	1.10
456.8	2.74	2.84	16.80	6.28	0.20
459.3	1.89	2.63	61.50	33.34	1.60
460.5	2.00	2.72	56.80	29.10	1.31
462.7	2.05	2.51	52.00	25.99	1.08
465.9	2.81	2.84	12.90	4.70	0.15
475.6	1.91	2.66	55.50	29.77	1.25
477.4	1.99	2.64	53.70	27.65	1.16
479.1	2.03	2.61	55.80	28.16	1.26
479.9	1.94	2.63	56.30	29.73	1.29
480.0	2.04	2.64	55.00	27.62	1.22
481.9	2.02	2.62	56.90	28.86	1.32
483.0	1.97	2.56	53.20	27.67	1.14
485.7	2.04	2.67	55.10	27.67	1.23
487.1	1.95	2.62	57.20	30.05	1.34
487.7	1.92	2.64	54.90	29.29	1.22
491.1	1.88	2.60	60.70	33.08	1.55
493.2	1.91	2.56	58.90	31.59	1.43
493.7	1.95	2.72	58.70	30.84	1.42
494.4	1.97	2.62	57.10	29.69	1.33
494.9	1.95	2.82	59.70	31.37	1.48

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
496.0	1.75	2.77	70.20	41.10	2.36
496.5	1.99	2.78	55.40	28.52	1.24
503.5	1.96	2.81	59.90	31.31	1.50
505.6	1.96	2.81	59.90	31.31	1.50
523.0	1.97	2.88	62.10	32.30	1.64
524.6	1.93	2.79	58.00	30.79	1.38
526.2	1.89	2.89	55.50	30.08	1.25
531.9	1.73	3.16	75.20	44.53	3.03
532.5	1.95	2.81	53.50	28.11	1.15
533.3	1.73	3.06	72.60	42.99	2.65
535.2	1.96	2.78	58.20	30.42	1.39
538.4	1.94	2.77	58.40	30.84	1.40
551.1	2.06	2.71	52.10	25.91	1.09
552.6	2.05	2.76	53.90	26.94	1.17
562.2	2.68	2.73	16.00	6.12	0.19
570.2	2.65	2.59	8.80	3.40	0.10
575.3	2.73	2.75	4.20	1.58	0.04
579.8	2.20	2.69	43.20	20.12	0.76
591.5	2.89	2.90	0.20	0.07	0.00
593.9	2.89	2.91	0.20	0.07	0.00
600.0	2.61	2.67	10.20	4.00	0.11
601.0	2.84	2.84	1.90	0.69	0.02
608.8	2.52	2.62	13.30	5.41	0.15
609.1	2.32	2.68	28.60	12.63	0.40
618.5	2.53	2.70	16.50	6.68	0.20
621.1	2.80	2.75	6.30	2.31	0.07
627.6	2.81	2.77	4.70	1.71	0.05
629.4	2.68	2.71	9.00	3.44	0.10
637.3	2.56	2.76	16.50	6.60	0.20
647.4	2.11	2.75	48.30	23.45	0.94
648.7	2.69	2.76	12.90	4.91	0.15
650.1	2.85	2.85	3.90	1.40	0.04
656.8	2.61	2.84	2.30	0.90	0.02
659.2	2.91	2.98	0.00	0.00	0.00
661.1	2.72	2.69	8.40	3.16	0.09
661.2	2.37	2.55	30.40	13.14	0.44
661.3	2.29	2.67	31.60	14.14	0.46
662.0	2.08	2.63	43.30	21.33	0.76
663.4	1.89	2.68	41.30	22.39	0.70
668.0	2.23	2.72	35.00	16.08	0.54
669.6	2.72	2.75	6.90	2.60	0.07
676.5	2.75	2.73	4.00	1.49	0.04
679.1	2.80	2.77	2.70	0.99	0.03

ODP Physical Properties

Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
682.3	2.84	2.82	2.00	0.72	0.02
686.3	2.18	2.68	40.40	18.99	0.68
687.7	2.18	2.71	38.60	18.14	0.63
689.5	2.10	2.67	42.30	20.64	0.73
690.2	2.20	2.78	41.70	19.42	0.72
692.6	2.13	2.67	38.30	18.42	0.62
694.9	2.16	2.73	38.80	18.40	0.63
698.4	2.22	2.73	41.40	19.11	0.71
701.6	2.17	2.76	40.30	19.03	0.67
705.0	2.87	2.88	1.90	0.68	0.02
705.5	2.87	2.87	1.60	0.57	0.02
707.1	2.86	2.83	5.40	1.93	0.06
708.3	2.87	2.86	0.60	0.21	0.01
710.1	2.89	2.89	0.20	0.07	0.00
711.4	2.89	2.90	0.30	0.11	0.00
713.4	2.64	2.62	5.10	1.98	0.05
715.0	2.17	2.69	42.20	19.92	0.73
716.6	2.20	2.60	42.20	19.65	0.73
718.0	2.25	2.72	41.90	19.08	0.72
718.8	2.24	2.76	41.00	18.75	0.69
720.7	2.22	2.59	43.80	20.21	0.78
724.0	2.54	2.76	17.60	7.10	0.21
725.2	2.52	2.67	23.00	9.35	0.30
725.5	2.44	2.78	22.10	9.28	0.28
733.2	2.62	2.79	14.20	5.55	0.17
734.2	2.47	2.73	20.90	8.67	0.26
743.1	2.59	2.73	10.70	4.23	0.12
745.3	2.71	2.74	11.00	4.16	0.12
754.6	2.55	2.61	17.20	6.91	0.21
756.5	2.28	2.74	36.20	16.27	0.57
757.7	2.31	2.84	34.90	15.48	0.54
758.5	2.24	2.73	34.70	15.87	0.53
763.7	2.72	2.80	9.50	3.58	0.10
765.1	2.81	2.76	5.20	1.90	0.06
766.4	2.74	2.86	9.60	3.59	0.11
767.7	2.41	2.65	24.20	10.29	0.32
768.7	2.53	2.75	24.70	10.00	0.33
773.8	2.68	2.82	11.10	4.24	0.13
782.2	2.80	2.59	10.50	3.84	0.12
782.4	2.66	2.72	18.10	6.97	0.22
782.6	2.50	2.70	31.20	12.79	0.45
783.7	2.27	2.61	30.10	13.58	0.43
786.0	2.71	2.75	9.10	3.44	0.10

ODP Physical Properties

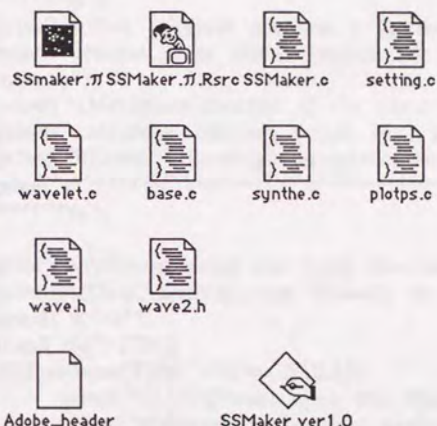
Site 797

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
791.3	2.70	2.80	8.80	3.34	0.10
792.6	2.22	2.71	30.80	14.21	0.45
795.2	2.27	2.77	34.10	15.39	0.52
796.7	2.34	2.74	34.00	14.89	0.51
798.3	2.25	2.74	34.90	15.89	0.54
802.3	2.31	2.75	34.30	15.21	0.52
803.3	2.34	2.76	36.60	16.02	0.58
805.0	2.15	2.75	34.60	16.49	0.53
807.6	2.45	2.76	33.90	14.18	0.51
815.4	2.31	2.74	33.10	14.68	0.49
816.0	2.33	2.58	32.70	14.38	0.49
818.3	2.35	2.64	30.90	13.47	0.45
820.9	2.33	2.64	31.40	13.81	0.46
852.6	2.77	2.77	6.60	2.44	0.07
855.3	2.54	2.74	21.50	8.67	0.27

Appendix

Appendix-B

This program produce a synthetic seismogram from the density-velocity profile. This program run on the Apple Macintosh. Following files need to run.



```
#include <stdio.h>
#define pct "%"
```

```
char TDV[20]; /* Input data file name */
static char *ILLH[20]; /* Illustrator 88 file name (header) */
static char *ILL[20]; /* Illustrator 88 file name (body) */
static char *ILLOUT[20]; /* Illustrator 88 file name (all) */
int INT; /* Sampling interval */
int DL; /* Display length */
float AE; /* Amplitude enhancement */
FILE *fopen(), *fin, *fin2, *fout, *fout2;
float tim[100], ai[100], rc[100], ss[100][49];
float yplotco, xplotco, maxai, minai, maxrc, minrc, maxtim, mintim,
timlen;
float maxref, minref;
int xai, yai, count, xrc, yrc, xref, yref, tt, disp;
int REF[549], ANS;
```



```
main()
{
int a, n;
float ti, den, vel;

/** PARAMETERS
*****/

printf("\n*****\n");
printf("\tThis program produce a Synthetic Seismogram.\n");
printf("\tPlease make sure a include file, which is a input wavelet
data.\n");
printf("\tMaximum number of the input data is 100.\n");
printf("\tMaximum display length is 2 sec.\n");
printf("\tEnter following parameters!!\n");
printf("\n*****\n");

printf("\n\tPlease enter the input file name, which include\n");
printf("\tTime, Density, and Velocity w/ Tab data.\n");
printf("\t>>>");
scanf("%s", TDV);
if((fin=fopen(TDV, "r")) == NULL){
    printf("\n\t\tCannot open this file, %s.\n", TDV);
    printf("\n\t\tPlease make sure again, bye.\n");
    return (-1);}
n=0;
count=0;
while(1){
    if((fscanf(fin, "%f\t%f\t%f", &ti, &den, &vel)) == EOF) break;
        tim[n]=(ti*1000);
        ai[n]=(den*vel);
            if(n==0){
                maxai=ai[n];
                minai=ai[n];
                maxtim=tim[n];
                mintim=tim[n];}
            if(n>0){
                if(ai[n] >= maxai) maxai=ai[n];
                if(ai[n] <= minai) minai=ai[n];
                if(tim[n] >= maxtim) maxtim=tim[n];
                if(tim[n] <= mintim) mintim=tim[n];}

        n++;
        count++;
}
```

```

timlen=maxtim-mintim;
fclose(fin);
printf("\n\n*** Data reading completed. ***\n");

printf("\n\nWhat sampling interval do you use, 1, 2, or 4
msec?\n");
printf("\t1 msec. >>> Hit 1\n(Display Length is up to 0.5 sec.)\n");
printf("\t2 msec. >>> Hit 2\n(Display Length is up to 1.0 sec.)\n");
printf("\t4 msec. >>> Hit 4\n(Display Length is up to 2.0 sec.)\n");
while(1){
    printf("\t>>>");
    scanf("%d", &INT);
    if(INT==1 && timlen<=500.0) break;
    else if(INT==2 && timlen<=1000.0) break;
    else if(INT==4 && timlen<=2000.0) break;
    else printf("\n\nWrong key input or out of display
length. Enter again!\n");
}

printf("\n\nWhich display length do you use?\n");
printf("\tLong >>> Hit 1\n");
printf("\tShort >>> Hit 2\n");
while(1){
    printf("\t>>>");
    scanf("%d", &DL);
    if(DL==1 || DL==2) break;
    else printf("\n\nWrong key input. Enter again!\n");
}

printf("\n\nEnter the amplitude enhancement factor. (ex. 1.0,
1.5)\n");
while(1){
    printf("\t>>>");
    scanf("%f", &AE);
    if(AE==0.0){
        printf("\n\nInputted factor is ZERO. Cannot
display!\n");
        printf("\tCanged it to '1'\n");
        AE=1.0;
        break;}
    break;}

while(1){
    printf("\n\nDo you like wiggle plus area display?\n");
    printf("\tYes >>> Hit 0(zero)\n");
    printf("\tNo >>> Hit 1\n");
    printf("\t>>>");

```



```

scanf("%d", &disp);
if(disp<0 && disp>1) continue;
else if(disp==0 || disp==1) break;
}

/** Illustrator 88 File **/
*ILL="Illust_body";
fout=fopen(*ILL, "w");
*ILLH="Adobe_header";

printf("\n\n*****
*****\n");
printf("\tDid you make a include file <wave.h>, which is a input
wavelet data?\n");
printf("\tNow you are ready to go. *** Crick the mouse and start!
***\n");
printf("\t*****
*****\n\n\7");

while( !Button() );

/** MAIN
*****
*/
setting();
wavelet();
base();
plots();
synthe();

while( !Button() );

fprintf(fout, "S\n");
fprintf(fout, "%s%sTrailer\n", pct, pct);
fprintf(fout, "Adobe_Illustrator881 /terminate get exec\n");
fprintf(fout, "Adobe_customcolor /terminate get exec\n");
fprintf(fout, "Adobe_cshow /terminate get exec\n");
fprintf(fout, "Adobe_cmykcolor /terminate get exec\n");
fclose(fout);

/** Illustrator 88 File **/

printf("\n\tDo you make a Illustrator 88 file?\n");
printf("\tYES >>> Hit 0(zero)\n");
printf("\tNO >>> Hit 1\n");

```

```

while(1){
    printf("\t>>>");
    scanf("%d", &ANS);
    if(ANS==0 || ANS==1) break;
    else printf("\t\tWrong key input.  Enter
again!\n");
}

```

```

if (ANS==0){
    char buff[81];
    printf("\n\tPlease enter the Illustrator 88 file
name.\n");

```

```

    printf("\t>>> ");
    scanf("%s", *ILLOUT);
    fout2=fopen(*ILLOUT, "w");
    fin2=fopen(*ILLH, "r");

```

```

while(1){
    if((fgets(buff, 80, fin2)) == NULL) break;
    fputs(buff,fout2);}

```

```

fclose(fin2);
fout=fopen(*ILL, "r");

```

```

while(1){
    if((fgets(buff, 80, fout)) == NULL) break;
    fputs(buff, fout2);}
fclose(fout);
fclose(fout2);
}

```

```

fclose(fout);
remove("Illust_body");

```

```

printf("\t\t\t\t\tEND\t\t\t\t\tEND\t\t\t\t\tEND\t\t>>> Bye!\n");

```

```

}

```

```

#define REMOVE_ALL_EVENTS 0

```

```

WindowPtr    SSMakerWindow;
WindowPtr    InformationWindow;
WindowPtr    WaveletWindow;

```

```

setting()

```



```

{
    ToolBoxInit();
    WindowInit();
}

```

ToolBoxInit()

```

{
    InitGraf(&thePort);
    InitFonts();
    FlushEvents(everyEvent, REMOVE_ALL_EVENTS);
    /*InitWindows();*/
    TEInit();
    InitDialogs(0L);
    InitCursor();
    /*InitMenus();*/
}

```

WindowInit()

```

{
    SSMakerWindow=GetNewWindow(400, 0L, -1L);
    ShowWindow(SSMakerWindow);
    InformationWindow=GetNewWindow(500, 0L, -1L);
    ShowWindow(InformationWindow);
    WaveletWindow=GetNewWindow(600, 0L, -1L);
    ShowWindow(WaveletWindow);
}

```

```

extern WindowPtr    WaveletWindow;
extern int INT;

```

wavelet()

```

{
#include "wave.h" /* Put the "wave.h" file into the current
directory. */
int xx, yy, n;

```

```

SetPort(WaveletWindow);
MoveTo(10, 5);
PenSize(3, 3);
LineTo(10, 60);
MoveTo(5, 33);
LineTo(154,33);

```

```

TextFont( monaco );
TextSize( 9 );

```

```
MoveTo(8, 73);
DrawString("\p0");
```

```
PenSize(2, 2);
MoveTo(40, 60);
LineTo(40, 62);
MoveTo(35, 73);
DrawString("\p10");
```

```
MoveTo(70, 60);
LineTo(70, 62);
MoveTo(65, 73);
DrawString("\p20");
```

```
MoveTo(100, 60);
LineTo(100, 62);
MoveTo(95, 73);
DrawString("\p30");
```

```
MoveTo(130, 60);
LineTo(130, 62);
MoveTo(125, 73);
DrawString("\p40");
```

```
MoveTo(120, 10);
DrawString("\p(msec.)");
```

```
MoveTo(10, 33);
```

```
xx=10;
```

```
if(INT==1){
    for(n=0; n<49; n++){
        yy=33 - wave[n]*27;
        LineTo(xx, yy);
        xx+=3;}
    }
```

```
else if(INT==2){
    for(n=0; n<49; n=n+2){
        yy=33 - wave[n]*27;
        LineTo(xx, yy);
        xx+=6;}
    }
```

```
else if(INT==4){
```

```

        for(n=0; n<49; n=n+4){
            yy=33 - wave[n]*27;
            LineTo(xx, yy);
            xx+=12;}
        }

extern WindowPtr      SSMakerWindow;
extern WindowPtr      InformationWindow;
extern float maxai, minai, maxrc, minrc, yplotco, xplotco, timlen,
mintim;
extern float ai[], tim[], rc[];
extern int xai, yai, xrc, yrc;
extern int DL, count;
base()
{
int n, yai2;

/** INFORMATIONS
*****/

SetPort(InformationWindow);
TextFont( helvetica );
TextSize( 12 );
TextFace( bold );
MoveTo(10, 15);
DrawString("\pSynthetic seismic trace would be");
MoveTo(10, 30);
DrawString("\pproduced by convolving a minimum-phase
wavelet.");
TextSize( 9 );
MoveTo(30, 45);
DrawString("\pSS: Synthetic Seismogram");
MoveTo(30, 57);
DrawString("\pRC: Reflection Coefficient");
MoveTo(30, 69);
DrawString("\pAI: Acoustic Impedance");

/*****/

/** SYNTHETIC SEISMOGRAM FRAME
*****/

```


4-Pentamethyl-Windrose

Trifluoromethyl-2

Trifluoromethyl-2

Trifluoromethyl-2

Trifluoromethyl-2

Trifluoromethyl-2

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Trifluoromethyl-2

Trifluoromethyl-2

```
SetPort(SSMakerWindow);
TextFont( helvetica );
TextFace( bold + shadow );
TextSize( 24 );
PenSize(3, 3);
MoveTo(60, 10);
LineTo(60, 180);
LineTo(460, 180);
PenSize(2, 2);
MoveTo(55, 45);
LineTo(60, 45);
PenSize(1, 1);
LineTo(460, 45);
PenSize(2, 2);
MoveTo(55, 105);
LineTo(460, 105);
MoveTo(55, 155);
LineTo(60, 155);
```

```
MoveTo(60, 180);
LineTo(60, 185);
MoveTo(100, 180);
LineTo(100, 185);
MoveTo(140, 180);
LineTo(140, 185);
MoveTo(180, 180);
LineTo(180, 185);
MoveTo(220, 180);
LineTo(220, 185);
PenSize(3, 3);
MoveTo(260, 180);
LineTo(260, 188);
PenSize(2, 2);
MoveTo(300, 180);
LineTo(300, 185);
MoveTo(340, 180);
LineTo(340, 185);
MoveTo(380, 180);
LineTo(380, 185);
MoveTo(420, 180);
LineTo(420, 185);
MoveTo(460, 180);
LineTo(460, 185);
```

```
MoveTo(15, 55);
```

```

DrawString("\pSS");
MoveTo(15, 115);
DrawString("\pRC");
MoveTo(15, 165);
DrawString("\pAI");

```

```

/*****
*****/

```

```

/** ACOUSTIC IMPEDANCE

```

```

*****/

```

```

PenSize(1, 1);
n=0;
yplotco = (40.0/(maxai - minai));
xplotco = (400.0/timlen);
while(1){
    yai=(175 - (ai[n] - minai) * yplotco);
    xai=((tim[n]-mintim)*xplotco/DL+60);
    if(n==0) MoveTo(xai, yai);
    if(n!=0){
        LineTo(xai, yai2);
        LineTo(xai, yai);
        if(DL==1 && xai>=460) break;
        if(DL==2 && xai>=260) break;}
    n++;
    yai2=yai;
}

```

```

/*****
*****/

```

```

/** REFLECTION COEFFICIENT

```

```

*****/

```

```

PenSize(2, 2);
n=0;
rc[0]=((ai[n] - 1536.0)/(ai[n] + 1536.0)); /* 1536.0=SEAWATER
IMPEDANCE */
maxrc=rc[0];
minrc=rc[0];
while(1){
    rc[n+1]=((ai[n+1] - ai[n]) / (ai[n] + ai[n+1]));
    if(rc[n+1] > maxrc) maxrc=rc[n+1];
    if(rc[n+1] < minrc) minrc=rc[n+1];
    n++;
    if(n==count) break;}

```



```

if(maxrc > 0.0) yplotco=(20.0/maxrc);
if(maxrc < 0.0) yplotco=(-20.0/minrc);

n=0;
MoveTo(60, 105);
while(1){
    yrc=(105.0 - (rc[n] * yplotco));
    xrc=((tim[n]-mintim)*xplotco/DL+60);
    if(n==0) LineTo(xrc, yrc);
    if(n!=0){
        MoveTo(xrc, 105);
        LineTo(xrc, yrc);
        if(DL==1 && xrc>=460) break;
        else if(DL==2 && xrc>=260) break;}
    n++;
}
/*****
*****/

}

#define pct "%"

plotps()
{
extern *fout;

    fprintf(fout,"O A\n");
    fprintf(fout,"u\n");
    fprintf(fout,"O O\n");
    fprintf(fout,"O g\n");
    fprintf(fout,"O i O J O j 1 w 4 M []O d\n");
    fprintf(fout,"%s%sNote:\n",pct,pct);
    fprintf(fout,"60 10 m\n");
    fprintf(fout,"60 80 l\n");
    fprintf(fout,"F\n");
    fprintf(fout,"U\n");
    fprintf(fout,"u\n");
    fprintf(fout,"60 45 m\n");
    fprintf(fout,"460 45 l\n");
    fprintf(fout,"F\n");
    fprintf(fout,"U\n");
    fprintf(fout,"O R\n");
    fprintf(fout,"O G\n");
    fprintf(fout,"60 45 m\n");

```

```
}
```

```
#include "wave.h"
```

```
extern WindowPtr    SSMakerWindow;  
extern float rc[], ss[100][49], tim[], REF[], mintim, xplotco, yplotco;  
extern float maxref, minref, timlen, AE;  
extern int count, INT, DL, xref, yref, tt, disp;  
extern WindowPtr    InformationWindow;  
extern int ANS;
```

```
synthe()  
{  
int n, m;  
extern *fout;
```

```
SetPort(SSMakerWindow);  
for(n=0; n<count; n++){  
for(m=0; m<49; m++){  
ss[n][m]=rc[n]*wave[m];}}
```

```
n=0;  
m=0;  
for(n=0; n<549; n++) REF[n]=0.0; /* INITIALIZE */  
maxref=0.0;  
minref=0.0;
```

```
if(INT==1){for(n=0; n<count; n++){  
for(m=0; m<49; m++){  
tt=((tim[n]-mintim)+m);  
REF[tt]=ss[n][m]+REF[tt];  
if(REF[tt] >= maxref) maxref=REF[tt];  
if(REF[tt] <= minref) minref=REF[tt];  
}}}
```

```
if(INT==2){for(n=0; n<count; n++){  
for(m=0; m<49; m++){  
tt=((tim[n]-mintim)+m)/2;  
REF[tt]=(ss[n][m]+REF[tt])/2;  
if(REF[tt] >= maxref) maxref=REF[tt];  
if(REF[tt] <= minref) minref=REF[tt];  
}}}
```

```
if(INT==4){for(n=0; n<count; n++){  
for(m=0; m<49; m++){
```

```

tt=((tim[n]-mintim)+m)/4;
REF[tt]=ss[n][m]+REF[tt];
if(REF[tt] >= maxref) maxref=REF[tt];
if(REF[tt] <= minref) minref=REF[tt];
}}}

```

```

if(maxref >= minref*(-1)) yplotco=(35.0/maxref);
else yplotco=(35.0/minref*(-1.0));

```

```

PenSize(1, 1);
MoveTo(60, 45);

```

```

if(INT==1){
    for(n=0; n<timlen; n++){
        xref=(xplotco*n/DL+60);
        yref=(45-REF[n]*yplotco*AE);
        LineTo(xref, yref);
        /* Wiggle Display */
        if(disp==0 && yref<=45){
            LineTo(xref, 45);
            MoveTo(xref, yref);}
        fprintf(fout,"%d %d \n", xref, 90-yref);
    }
}
else if(INT==2){
    for(n=0; n<(timlen/2); n++){
        xref=((xplotco*n*2)/DL+60);
        yref=(45-REF[n]*yplotco*AE);
        PenSize(1, 1);
        LineTo(xref, yref);
        /* Wiggle Display */
        if(disp==0 && yref<=45){
            PenSize(2, 1);
            LineTo(xref, 45);
            MoveTo(xref, yref);}
        fprintf(fout,"%d %d \n", xref, 90-yref);
    }
}
else if(INT==4){
    for(n=0; n<(timlen/4); n++){
        xref=((xplotco*n*4)/DL+60);
        yref=(45-REF[n]*yplotco*AE);
        PenSize(1, 1);
        LineTo(xref, yref);
        /* Wiggle Display */
        if(disp==0 && yref<=45){
            PenSize(4, 1);

```



```

LineTo(xref, 45);
MoveTo(xref, yref);}
fprintf(fout,"%d %d \n", xref, 90-yref);
}}
/*****
*****/
SetPort(InformationWindow);
TextFont( helvetica );
TextSize( 9 );
TextFace( bold );
MoveTo(180, 69);
DrawString("\p-- Crick the Mouse to EXIT. --");
}

```

Appendix

C: Raw Data of Temperature Estimation

[illegible]

56	10	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
57	1500	43	30.1	138	55.3	4.62	5.04	5.53	0.42	0.49	0.91	43.50	38.92	336.14	119.00	90.31	505.5	1401.290	14.3046	14.6688	14	0.55	1.60	3.78	8.29
58	1530	43	30.1	138	48.2	4.64	5.11	5.41	0.47	0.30	0.77	43.50	38.80	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	0.53	1.96	4.97	11.79
59	1600	43	30.3	138	41.2	4.62	5.05	5.40	0.43	0.35	0.78	43.51	38.69	344.21	121.92	98.78	5456.209	145.203221	207181.20	0.54	0.57	1.67	3.99	8.90	
60	1630	43	30.1	138	34.1	4.60	5.01	5.60	0.41	0.59	1.00	43.50	38.57	328.07	116.91	112.92	103.6432	0701237	072879.07	6225.06	0.54	0.54	1.54	3.57	7.72
61	1800	43	29.6	138	12.0	4.73	5.10	5.22	0.37	0.12	0.49	43.49	38.20	295.79	135.23	114.95384	7901309	792285.79	6523.79	0.48	0.48	1.29	2.46	5.77	
62	1830	43	29.6	138	4.7	4.89	5.34	5.90	0.45	0.56	1.01	43.49	38.08	360.36	111.00	94.54880	3591459	355598.358273	36	0.60	0.60	1.81	4.46	10.25	
63	1900	43	29.3	137	57.3	4.89	5.47	6.10	0.45	0.76	1.21	43.49	37.96	360.36	111.00	94.54880	3591459	355598.358273	36	0.60	0.60	1.81	4.46	10.25	
64	1930	43	29.3	137	49.9	4.94	5.47	6.16	0.53	0.69	1.22	43.49	37.83	424.92	94.14	80.02581	9201984	925512.91	4383.9	0.72	0.72	2.46	6.83	17.83	
65	2000	43	29.3	137	42.6	4.95	5.40	5.95	0.45	0.45	0.90	43.49	37.71	360.36	111.00	94.54880	3591459	355598.358273	36	0.60	0.60	1.81	4.46	10.25	
66	2030	43	29.3	137	35.1	4.92	5.48	6.45	0.56	0.97	1.53	43.50	37.59	440.13	89.06	75.70621	1302215	126439.1231	7634.1	0.77	0.77	2.75	7.98	21.85	
67	2100	43	29.8	137	27.4	4.91	5.48	6.50	0.57	1.02	1.59	43.50	37.46	457.20	87.49	74.37654	2002295	19675.1201	8859.1	0.79	0.79	2.83	8.40	23.37	
68	2130	43	29.9	137	19.9	4.90	5.51	6.58	0.61	1.07	1.68	43.50	37.33	489.48	81.72	69.46687	4792642	478298.48246	58.4	0.86	0.86	3.28	10.29	30.56	
69	J11																								
70	05:30	43	14.1	137	36.4	4.94	5.44	6.40	0.50	0.96	1.46	43.24	37.61	400.71	99.82	84.85543	7091773	704709.701	1714.7	0.68	0.68	2.20	5.84	14.52	
71	06:00	43	14.2	137	44.1	4.93	5.41	6.40	0.48	0.99	1.47	43.24	37.74	384.57	104.01	88.41517	5701642	574233.561	0202.5	0.64	0.64	2.04	5.25	12.65	
72	06:30	43	14.8	137	51.1	4.94	5.50	6.35	0.56	0.85	1.41	43.25	37.85	449.13	89.06	75.70621	1302215	126439.1231	7634.1	0.77	0.77	2.75	7.98	21.85	
73	09:00	43	14.6	138	26.8	4.67	5.14	5.34	0.47	0.20	0.67	43.24	38.45	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	0.63	1.96	4.97	11.79
74	09:30	43	14.7	138	34.1	4.66	5.11	5.50	0.45	0.39	0.84	43.24	38.57	360.36	111.00	94.54880	3591459	355598.358273	36	0.60	0.60	1.81	4.46	10.25	
75	11:00	43	15.0	138	54.3	4.57	5.04	5.29	0.47	0.25	0.72	43.25	38.91	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	0.63	1.96	4.97	11.79
76	11:30	43	15.0	139	0.8	4.58	5.04	5.25	0.46	0.21	0.69	43.25	39.01	368.43	108.57	92.28493	4291518	423800.428875	42	0.61	0.61	1.88	4.71	11.00	
77	12:00	43	15.0	139	7.3	4.54	5.06	5.43	0.52	0.37	0.87	43.25	39.12	416.85	95.96	81.25668	8491912	8449233.851	3439.8	0.71	0.71	2.37	6.49	16.66	
78	J12																								
79	21:00	42	59.7	139	3.4	4.80	5.12	6.00	0.32	0.88	1.20	43.00	39.06	255.44	156.59	133.10326	440823.4401	688.433193	43	0.41	0.41	1.02	2.10	3.96	
80	21:30	42	59.6	138	56.2	4.76	5.13	5.94	0.37	0.81	1.18	42.99	38.94	295.79	135.23	114.95384	7901309	792285.79	6523.79	0.48	0.48	1.29	2.84	5.77	
81	22:00	42	59.4	138	49.2	4.79	5.15	6.02	0.36	0.87	1.21	42.99	38.82	287.72	139.02	118.17372	720993.71921	54.71	4931.72	0.47	0.47	1.23	2.67	5.36	
82	23:00	43	0.1	138	35.0	4.82	5.24	5.58	0.42	0.34	0.76	43.00	38.58	336.14	119.00	101.15444	1401290	143006.146688	14	0.55	0.55	1.60	3.78	8.29	
83	00:00	43	1.0	138	20.5	4.84	5.31	6.10	0.47	0.79	1.26	43.02	38.34	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	0.63	1.96	4.97	11.79
84	00:30	43	0.7	138	13.5	4.84	5.30	6.12	0.46	0.82	1.28	43.01	38.12	368.43	108.57	92.28493	4291518	423800.428875	42	0.61	0.61	1.88	4.71	11.00	
85	01:00	42	59.9	138	6.9	4.88	5.36	6.07	0.48	0.71	1.19	43.00	38.12	384.57	104.01	88.41517	5701642	574233.561	0202.5	0.64	0.64	2.04	5.25	12.65	
86	01:30	42	59.4	138	0.2	4.92	5.35	6.25	0.43	0.90	1.33	42.99	38.00	344.21	116.21	98.78456	2091345	203221.207181	20	0.57	0.57	1.67	3.99	8.90	
87	02:00	42	59.4	137	53.0	4.94	5.47	6.47	0.53	1.00	1.53	42.99	37.88	424.92	94.14	80.02581	9201984	925512.91	4383.9	0.72	0.72	2.46	6.83	17.83	
88	02:30	42	59.5	137	46.4	4.93	5.46	6.45	0.53	0.99	1.52	42.99	37.77	424.92	94.14	80.02581	9201984	925512.91	4383.9	0.72	0.72	2.46	6.83	17.83	
89	03:00	42	59.5	137	39.7	4.94	5.43	6.51	0.49	1.12	1.61	42.99	37.66	392.64	101.88	86.59530	6401707	644666.64	10934.6	0.66	0.66	2.12	5.54	13.55	
90	03:30	42	59.9	137	32.8	4.93	5.44	6.50	0.51	1.06	1.57	43.00	37.55	408.78	97.85	83.17555	7801841	784965.771	2549.7	0.69	0.69	2.29	6.16	15.55	
91	J13																								
92	05:15	42	44.5	138	42.3	4.85	5.33	6.30	0.48	0.97	1.45	42.74	38.71	384.57	104.01	88.41517	5701642	574233.561	0202.5	0.64	0.64	2.04	5.25	12.65	
93	05:30	42	44.6	138	45.7	4.88	5.36	6.30	0.48	0.94	1.42	42.74	38.76	384.57	104.01	88.41517	5701642	574233.561	0202.5	0.64	0.64	2.04	5.25	12.65	
94	J14																								
95	02:30	42	29.7	138	58.3	4.91	5.40	6.40	0.49	1.00	1.49	42.50	38.97	392.64	101.88	86.59530	6401707	644666.64	10934.6	0.66	0.66	2.12	5.54	13.55	
96	03:00	42	29.8	138	51.2	4.92	5.47	6.60	0.55	1.13	1.68	42.50	38.85	441.06	90.69	77.09308	0592136	0661.65	6478.0	0.76	0.76	2.65	7.58	20.42	
97	03:30	42	29.8	138	44.0	4.91	5.37	6.60	0.46	1.23	1.69	42.50	38.73	368.43	108.57	92.28493	4291518	423800.428875	42	0.61	0.61	1.88	4.71	11.00	
98	J15																								
99	18:00	42	14.1	138	50.2	4.95	5.70	6.65	0.75	0.95	1.70	42.24	38.84	602.47	66.39	56.43886	4694708	4616490.461896	4	1.10	1.10	5.22	20.44	76.70	
100	18:15	42	14.1	138	54.6	4.98	5.48	6.00	0.50	0.52	1.02	42.00	38.91	400.71	99.82	84.85543	7091773	704709.701	1714.7	0.68	0.68	2.20	5.84	14.52	
101	J16																								
102	13:15	42	0.1	138	54.6	4.98	5.48	6.20	0.54	0.72	1.26	42.00	38.86	432.99	99.82	84.85543	7091773	704709.701	1714.7	0.68	0.68	2.20	5.84	14.52	
103	13:30	41	59.9	138	51.4	4.94	5.48	6.20	0.54	0.72	1.26	42.00	38.86	432.99	99.82	84.85543	7091773	704709.701	1714.7	0.68	0.68	2.20	5.84	14.52	
104	J17																								
105	18:30	41	44.9	137	30.3	4.92	5.24	7.10	0.32	1.86	2.18	41.75	37.51	255.44	156.59	133.10326	440823.4401	688.433193	43	0.41	0.41	1.02	2.10	3.96	
106	19:00	41	45.2	137	32.7	4.92	5.24	7.15	0.32	1.91	2.23	41.75	37.62	255.44	156.59	133.10326	440823.4401	688.433193	43	0.41	0.41	1.02	2.10	3.96	
107	19:30	41	45.4	137	44.2	4.93	5.26	7.20	0.33	1.94	2.27	41.76	37.74	263.51	151.80	129.03337	510864.5101	796.513447	51	0.42	0.42	1.07	2.23	4.28	
108	20:00	41	45.8	137	51.2	4.92	5.27	7.25	0.34	1.98	2.32	41.76	37.85	271.58	147.29	125.19349	579996.5791	910.575719	58	0.44	0.44	1.13	2.37	4.61	
109	20:30	41	46.1	137	58.2	4.92	5.30	7.31	0.38	1.83	2.21	41.71	37.97	303.86	131.64	111.89395	8591087	852423.852008	85	0.49	0.49	1.35	3.01	6.21	
110	21:00</																								

111	22:00	41	46.0	138	20.7	4.95	5.40	6.80	0.46	1.29	1.86	41.71	138.22	320.09	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
112	22:00	41	46.0	138	20.7	4.95	5.40	6.80	0.46	1.29	1.86	41.71	138.22	320.09	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
113	22:00	41	45.9	138	20.7	4.95	5.40	6.80	0.46	1.29	1.86	41.71	138.22	320.09	125.00	106.25	420	1186	2720	5793	0.51	1.47	3.37	7.18
114	23:00	41	45.8	138	20.7	4.95	5.40	6.80	0.46	1.29	1.86	41.71	138.22	320.09	125.00	106.25	420	1186	2720	5793	0.51	1.47	3.37	7.18
115	23:00	41	45.8	138	20.7	4.95	5.40	6.80	0.46	1.29	1.86	41.71	138.22	320.09	125.00	106.25	420	1186	2720	5793	0.51	1.47	3.37	7.18
116	01:00	41	45.4	139	34.1	6.00	3.07	3.32	0.47	0.25	0.92	41.76	139.06	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.97	11.79
117	01:30	41	45.2	139	10.5	2.80	3.20	3.75	0.40	0.55	0.95	41.75	139.18	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
118	12:30	41	30.0	138	22.0	4.94	5.43	6.55	0.49	1.12	1.61	41.50	138.37	392.64	101.88	86.59	530.0	640.1	707.6	644.6	0.66	2.12	5.54	13.55
119	12:30	41	29.5	138	15.2	4.95	5.41	6.52	0.46	1.11	1.57	41.49	138.25	368.43	108.57	92.28	493.2	518.2	423.0	428.7	0.61	1.88	4.71	11.00
120	13:00	41	29.7	138	8.4	4.94	5.32	6.65	0.38	1.33	1.71	41.50	138.14	303.86	131.64	111.89	395.8	859.1	887.8	852.3	0.49	1.35	3.01	6.21
121	13:30	41	29.7	138	8.4	4.94	5.32	6.65	0.38	1.33	1.71	41.50	138.14	303.86	131.64	111.89	395.8	859.1	887.8	852.3	0.49	1.35	3.01	6.21
122	14:00	41	29.8	138	1.6	4.93	5.31	6.60	0.38	1.29	1.67	41.50	138.03	303.86	131.64	111.89	395.8	859.1	887.8	852.3	0.49	1.35	3.01	6.21
123	14:00	41	29.8	137	54.6	4.93	5.22	6.75	0.29	1.53	1.82	41.50	137.79	255.44	172.99	147.04	293.2	229.07	229.1	225.2	0.37	0.88	1.73	3.13
124	15:00	41	29.9	137	54.6	4.93	5.22	6.75	0.29	1.53	1.82	41.50	137.79	255.44	172.99	147.04	293.2	229.07	229.1	225.2	0.37	0.88	1.73	3.13
125	15:00	41	30.0	137	40.5	4.92	5.28	7.00	0.36	1.72	2.08	41.50	137.68	287.72	139.02	118.37	720.99	719.21	54.7	143.21	0.47	1.23	2.67	5.36
126	16:00	41	30.0	137	35.5	4.92	5.23	6.95	0.40	1.65	2.03	41.50	137.56	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
127	16:30	41	30.3	137	26.6	4.90	5.30	6.90	0.40	1.60	2.00	41.51	137.44	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
128	10:30	40	59.8	137	45.4	4.88	5.20	6.17	0.32	0.97	1.29	41.00	137.76	255.44	156.59	133.10	326.6	440.8	233.1	193.4	0.41	1.02	2.10	3.96
129	10:30	40	46.1	137	44.6	4.93	5.20	6.37	0.27	1.17	1.44	41.08	137.74	215.09	185.97	158.08	270.9	896.3	889.1	219.0	0.34	0.79	1.51	2.67
130	11:00	40	46.1	137	44.6	4.93	5.20	6.37	0.27	1.17	1.44	41.08	137.74	215.09	185.97	158.08	270.9	896.3	889.1	219.0	0.34	0.79	1.51	2.67
131	11:30	40	46.1	137	44.6	4.93	5.20	6.37	0.27	1.17	1.44	41.08	137.74	215.09	185.97	158.08	270.9	896.3	889.1	219.0	0.34	0.79	1.51	2.67
132	12:00	40	14.7	137	45.0	4.92	5.20	6.40	0.28	1.20	1.48	41.25	137.74	223.16	179.25	152.36	281.1	160.71	160.3	162.3	0.35	0.84	1.62	2.89
133	12:30	40	14.7	137	52.4	4.94	5.20	6.25	0.26	1.08	1.31	41.25	137.87	207.02	193.22	164.24	260.0	202.0	202.0	138.0	0.33	0.75	1.41	2.45
134	13:00	40	15.3	137	59.7	4.94	5.20	6.40	0.26	1.20	1.46	41.26	138.00	207.02	193.22	164.24	260.0	202.0	202.0	138.0	0.33	0.75	1.41	2.45
135	13:30	40	14.9	138	7.3	4.93	5.25	6.46	0.32	1.21	1.53	41.25	138.12	255.44	156.59	133.10	326.6	440.8	233.1	193.4	0.41	1.02	2.10	3.96
136	14:00	40	14.5	138	14.6	4.94	5.23	6.10	0.29	0.87	1.16	41.24	138.24	231.23	172.99	147.04	293.2	229.07	229.1	225.2	0.34	0.79	1.51	2.67
137	14:30	40	14.3	138	21.1	4.94	5.21	6.20	0.27	0.99	1.26	41.24	138.36	215.09	185.97	158.08	270.9	896.3	889.1	219.0	0.34	0.79	1.51	2.67
138	15:00	40	14.6	138	28.9	4.90	5.19	6.30	0.29	1.11	1.40	41.24	138.48	231.23	172.99	147.04	293.2	229.07	229.1	225.2	0.37	0.88	1.73	3.13
139	15:30	40	14.6	138	36.3	4.46	4.73	5.65	0.27	0.92	1.19	41.24	138.61	215.09	185.97	158.08	270.9	896.3	889.1	219.0	0.34	0.79	1.51	2.67
140	10:30	41	1.0	138	48.6	4.55	4.88	5.36	0.33	0.48	0.81	41.02	138.81	263.51	151.80	129.03	337.7	510.8	510.7	96.5	0.42	1.07	2.23	4.28
141	05:30	41	0.8	138	42.4	4.56	4.90	5.40	0.34	0.50	0.84	41.01	138.71	271.58	147.29	125.19	349.9	579.0	579.1	910.7	0.44	1.13	2.37	4.61
142	06:00	41	0.8	138	42.4	4.56	4.90	5.40	0.34	0.50	0.84	41.01	138.71	271.58	147.29	125.19	349.9	579.0	579.1	910.7	0.44	1.13	2.37	4.61
143	06:30	41	0.5	138	36.1	4.57	4.93	5.60	0.36	0.67	1.03	41.01	138.60	287.72	139.02	118.37	720.99	719.21	54.7	143.21	0.47	1.23	2.67	5.36
144	07:00	41	0.6	138	29.6	4.58	4.91	5.70	0.33	0.79	1.12	41.01	138.49	263.51	151.80	129.03	337.7	510.8	510.7	96.5	0.42	1.07	2.23	4.28
145	08:00	41	0.5	138	16.4	4.70	4.91	5.70	0.21	0.79	1.00	41.01	138.27	166.66	240.00	204.00	205.6	660.4	660.7	87.6	0.26	0.55	0.98	1.59
146	08:30	41	0.6	138	10.0	4.88	5.16	6.15	0.28	0.99	1.27	41.01	138.17	223.16	179.25	152.36	281.1	160.71	160.3	162.3	0.35	0.84	1.62	2.89
147	09:00	41	0.4	138	3.9	4.91	5.18	6.22	0.27	1.04	1.31	41.01	138.07	215.09	185.97	158.08	270.9	896.3	889.1	219.0	0.34	0.79	1.51	2.67
148	09:30	41	0.3	137	57.9	4.92	5.13	6.15	0.21	1.02	1.23	41.01	137.97	166.66	240.00	204.00	205.6	660.4	660.7	87.6	0.26	0.55	0.98	1.59
149	10:00	41	0.1	137	51.7	4.92	5.21	6.06	0.29	0.85	1.14	41.00	137.86	231.23	172.99	147.04	293.2	229.07	229.1	225.2	0.37	0.88	1.73	3.13
150	10:30	40	59.8	137	45.4	4.88	5.18	6.17	0.30	0.99	1.29	41.00	137.76	255.44	156.59	133.10	326.6	440.8	233.1	193.4	0.41	1.02	2.10	3.96
151	12:30	40	44.8	137	58.8	4.70	5.33	5.88	0.63	0.25	0.88	40.75	137.88	505.62	79.11	67.24	15.0	92.8	92.8	131.2	0.38	0.93	1.85	3.39
152	18:30	40	44.8	137	58.8	4.70	5.33	5.88	0.63	0.25	0.88	40.75	137.88	505.62	79.11	67.24	15.0	92.8	92.8	131.2	0.38	0.93	1.85	3.39
153	19:00	40	44.7	137	59.9	4.80	5.43	5.70	0.63	0.27	0.90	40.75	138.00	505.62	79.11	67.24	15.0	92.8	92.8	131.2	0.38	0.93	1.85	3.39
154	19:30	40	44.7	138	7.0	4.78	5.40	5.66	0.62	0.26	0.88	40.75	138.12	497.55	80.39	68.30	15.0	92.8	92.8	131.2	0.38	0.93	1.85	3.39
155	20:30	40	45.7	138	21.1	4.45	4.93	5.20	0.48	0.27	0.75	40.76	138.35	368.43	104.01	88.41	517.0	642.5	642.3	561.0	0.64	2.04	5.25	12.65
156	21:00	40	45.7	138	28.4	4.54	5.00	5.30	0.46	0.30	0.76	40.76	138.47	384.53	108.57	92.28	493.2	518.2	423.0	428.7	0.61	1.88	4.71	11.00
157	21:30	40	45.6	138	35.6	4.50	4.93	5.15	0.43	0.22	0.65	40.76	138.59	344.21	116.21	98.78	456.2	459.1	459.1	207.1	0.57	1.67	3.99	8.90
158	22:00	40	45.3	138	42.8	4.40	4.85	5.04	0.45	0.19	0.64	40.76	138.71	360.36	111.00	94.55	480.5	459.1	459.1	207.1	0.60	1.81	4.46	10.25
159	12:30	40	30.7	138	17.6	4.31	4.70	4.88	0.39	0.18	0.57	40.51	138.29	311.93	128.23	109.00	407.9	929.1	135.0	925.6	0.51	1.41	3.19	6.68
160	22:00	40	30.2	138	14.0	4.50	4.95	5.15	0.45	0.20	0.65	40.50	138.18	360.36	111.00	94.55	480.5	459.1	459.1	207.1	0.60	1.81	4.46	10.25
161	22:30	40	30.1	138	4.3	4.40	4.90	5.06	0.49	0.16	0.63	40.50	138.07	392.64	101.88	86.59	530.0	640.1	707.6	644.6	0.66	2.12	5.54	13.55
162	23:00	40	30.2	138	4.3	4.40	4.90	5.06	0.49	0.16	0.63	40.50	138.07	392.64	101.88	86.59	530.0	640.1	70					

166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
01:35	02:00	02:15	02:30	02:45	03:00	03:15	03:30	03:45	04:00	04:15	04:30	04:45	05:00	05:15	05:30	05:45	06:00	06:15	06:30	06:45	07:00	07:15	07:30	07:45	08:00	08:15	08:30	08:45	09:00	09:15	09:30	09:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45	20:00	20:15	20:30	20:45	21:00	21:15	21:30	21:45	22:00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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2100	39	40.1	137	14.1	3.66	3.92	4.76	0.84	3.30	39.67	137.24	368.43	108.37	92.284903	429.1518	42.3600	4238875.42	0.61	1.88	4.71	11.00	
2110	39	39.6	137	20.9	3.48	3.94	4.63	0.46	0.69	1.15	39.66	137.35	368.43	108.37	92.284903	429.1518	42.3600	4238875.42	0.61	1.88	4.71	11.00
2120	39	39.1	137	27.7	3.57	3.92	4.63	0.35	0.38	0.93	39.63	137.46	368.43	108.37	92.284903	429.1518	42.3600	4238875.42	0.61	1.88	4.71	11.00
2130	39	38.6	137	34.5	3.60	3.86	4.53	0.36	0.49	0.85	39.63	137.46	368.43	108.37	92.284903	429.1518	42.3600	4238875.42	0.61	1.88	4.71	11.00
2140	39	38.1	137	41.3	3.64	3.84	4.49	0.35	0.49	0.85	39.63	137.46	368.43	108.37	92.284903	429.1518	42.3600	4238875.42	0.61	1.88	4.71	11.00
2150	39	37.6	137	48.1	3.68	3.81	4.43	0.32	0.52	0.77	39.56	137.78	388.72	139.02	118.173572	720993.719215417143321.72	0.47	0.31	0.71	1.32	2.26	
2160	39	37.1	137	54.9	3.71	3.76	4.38	0.25	0.52	0.77	39.56	137.78	388.72	139.02	118.173572	720993.719215417143321.72	0.47	0.31	0.71	1.32	2.26	
2170	39	36.6	137	61.7	3.75	3.70	4.32	0.22	0.51	0.77	39.53	137.89	207.167	193.22	164.242602	602020.020138.021978.02	0.38	0.73	1.41	2.45	3.39	
2180	39	36.1	137	68.5	3.78	3.73	4.25	0.20	0.49	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2190	39	35.6	137	75.3	3.81	3.76	4.18	0.18	0.47	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2200	39	35.1	137	82.1	3.84	3.79	4.11	0.16	0.45	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2210	39	34.6	137	88.9	3.87	3.82	4.04	0.14	0.43	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2220	39	34.1	137	95.7	3.90	3.85	3.97	0.12	0.41	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2230	39	33.6	137	102.5	3.93	3.88	3.90	0.10	0.39	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2240	39	33.1	137	109.3	3.96	3.91	3.83	0.08	0.37	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2250	39	32.6	137	116.1	3.99	3.94	3.75	0.06	0.35	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2260	39	32.1	137	122.9	4.02	3.97	3.66	0.04	0.33	0.70	39.53	138.00	239.30	167.16	142.08304	299745.2995148.0236.3072.32	0.38	0.73	1.41	2.45	3.39	
2270	39	31.6	137	129.7	4.05	4.00	3.57	0.02	0.31	0.70	39.											
2280	39	31.1	137	136.5	4.08	4.03	3.48	0.01	0.29	0.70	39.											
2290	39	30.6	137	143.3	4.11	4.06	3.39	0.00	0.27	0.70	39.											
2300	39	30.1	137	150.1	4.14	4.09	3.30	0.00	0.25	0.70	39.											
2310	39	29.6	137	156.9	4.17	4.12	3.21	0.00	0.23	0.70	39.											
2320	39	29.1	137	163.7	4.20	4.15	3.12	0.00	0.21	0.70	39.											
2330	39	28.6	137	170.5	4.23	4.18	3.03	0.00	0.19	0.70	39.											
2340	39	28.1	137	177.3	4.26	4.21	2.94	0.00	0.17	0.70	39.											
2350	39	27.6	137	184.1	4.29	4.24	2.85	0.00	0.15	0.70	39.											
2360	39	27.1	137	190.9	4.32	4.27	2.76	0.00	0.13	0.70	39.											
2370	39	26.6	137	197.7	4.35	4.30	2.67	0.00	0.11	0.70	39.											
2380	39	26.1	137	204.5	4.38	4.33	2.58	0.00	0.09	0.70	39.											
2390	39	25.6	137	211.3	4.41	4.36	2.49	0.00	0.07	0.70	39.											
2400	39	25.1	137	218.1	4.44	4.39	2.40	0.00	0.05	0.70	39.											
2410	39	24.6	137	224.9	4.47	4.42	2.31	0.00	0.03	0.70	39.											
2420	39	24.1	137	231.7	4.50	4.45	2.22	0.00	0.01	0.70	39.											
2430	39	23.6	137	238.5	4.53	4.48	2.13	0.00	0.00	0.70	39.											
2440	39	23.1	137	245.3	4.56	4.51	2.04	0.00	0.00	0.70	39.											
2450	39	22.6	137	252.1	4.59	4.54	1.95	0.00	0.00	0.70	39.											
2460	39	22.1	137	258.9	4.62	4.57	1.86	0.00	0.00	0.70	39.											
2470	39	21.6	137	265.7	4.65	4.60	1.77	0.00	0.00	0.70	39.											
2480	39	21.1	137	272.5	4.68	4.63	1.68	0.00	0.00	0.70	39.											
2490	39	20.6	137	279.3	4.71	4.66	1.59	0.00	0.00	0.70	39.											
2500	39	20.1	137	286.1	4.74	4.69	1.50	0.00	0.00	0.70	39.											
2510	39	19.6	137	292.9	4.77	4.72	1.41	0.00	0.00	0.70	39.											
2520	39	19.1	137	299.7	4.80	4.75	1.32	0.00	0.00	0.70	39.											
2530	39	18.6	137	306.5	4.83	4.78	1.23	0.00	0.00	0.70	39.											
2540	39	18.1	137	313.3	4.86	4.81	1.14	0.00	0.00	0.70	39.											
2550	39	17.6	137	320.1	4.89	4.84	1.05	0.00	0.00	0.70	39.											
2560	39	17.1	137	326.9	4.92	4.87	0.96	0.00	0.00	0.70	39.											
2570	39	16.6	137	333.7	4.95	4.90	0.87	0.00	0.00	0.70	39.											
2580	39	16.1	137	340.5	4.98	4.93	0.78	0.00	0.00	0.70	39.											
2590	39	15.6	137	347.3	5.01	4.96	0.69	0.00	0.00	0.70	39.											
2600	39	15.1	137	354.1	5.04	5.00	0.60	0.00	0.00	0.70	39.											
2610	39	14.6	137	360.9	5.07	5.03	0.51	0.00	0.00	0.70	39.											
2620	39	14.1	137	367.7	5.10	5.06	0.42	0.00	0.00	0.70	39.											
2630	39	13.6	137	374.5	5.13	5.09	0.33	0.00	0.00	0.70	39.											
2640	39	13.1	137	381.3	5.16	5.12	0.24	0.00	0.00	0.70	39.											
2650	39	12.6	137	388.1	5.19	5.15	0.15	0.00	0.00	0.70	39.											
2660	39	12.1	137	394.9	5.22	5.18	0.06	0.00	0.00	0.70	39.											
2670	39	11.6	137	401.7	5.25	5.21	0.00	0.00	0.00	0.70	39.											
2680	39	11.1	137	408.5	5.28	5.24	0.00	0.00	0.00	0.70	39.											
2690	39	10.6	137	415.3	5.31	5.27	0.00	0.00	0.00	0.70	39.											
2700	39	10.1	137	422.1	5.34	5.30	0.00	0.00	0.00	0.70	39.											
2710	39	9.6	137	428.9	5.37	5.33	0.00	0.00	0.00	0.70	39.											
2720	39	9.1	137	435.7	5.40	5.36	0.00	0.00	0.00	0.70	39.											
2730	39	8.6	137	442.5	5.43	5.39	0.00	0.00	0.00	0.70	39.											
2740	39	8.1	137	449.3	5.46	5.42	0.00	0.00	0.00	0.70	39.											
2750	39	7.6	137	456.1	5.49	5.45	0.00	0.00	0.00	0.70	39.											
2760	39	7.1	137	462.9	5.52	5.48	0.00	0.00	0.00	0.70	39.											
2770	39	6.6	137	469.7	5.55	5.51	0.00	0.00	0.00	0.70	39.											
2780	39	6.1	137	476.5	5.58	5.54	0.00	0.00	0.00	0.70	39.											
2790	39	5.6	137	483.3	5.61	5.57	0.00	0.00	0.00	0.70	39.											
2800	39	5.1	137	490.1	5.64	5.60	0.00	0.00	0.00	0.70	39.											
2810	39	4.6	137	496.9	5.67	5.63	0.00	0.00	0.00	0.70	39.											
2820	39	4.1	137	503.7	5.70	5.66	0.00	0.00	0.00	0.70	39.											
2830	39	3.6	137	510.5	5.73	5.69	0.00	0.00	0.00	0.70	39.											

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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331	04:00	38	24.5	135	3.7	4.02	4.70	2.48	0.68	0.48	1.56	38.41	135.06	525.98	73.36	69.37	78.07	79.58	111.77	135.07	186.9	0.98	4.16	1.33	48.36
332	04:00	38	25.0	135	3.7	4.03	4.70	2.48	0.68	0.48	1.56	38.41	135.06	525.98	73.36	69.37	78.07	79.58	111.77	135.07	186.9	0.98	4.16	1.33	48.36
333	04:00	38	25.5	135	3.7	4.03	4.70	2.48	0.68	0.48	1.56	38.41	135.06	525.98	73.36	69.37	78.07	79.58	111.77	135.07	186.9	0.98	4.16	1.33	48.36
334	05:00	38	25.5	134	50.0	4.03	4.60	3.50	0.57	0.70	1.21	38.53	134.93	437.20	87.49	77.09	60.82	200.2295	196.775	201.88591	0.79	2.85	8.40	23.37	
335	05:00	38	25.5	134	50.0	4.03	4.60	3.50	0.57	0.70	1.21	38.53	134.93	437.20	87.49	77.09	60.82	200.2295	196.775	201.88591	0.79	2.85	8.40	23.37	
336	06:00	38	31.0	134	49.5	4.03	4.60	4.90	0.57	0.30	0.87	38.68	134.83	437.20	87.49	77.09	60.82	200.2295	196.775	201.88591	0.79	2.85	8.40	23.37	
337	03:00	38	30.0	134	34.7	4.03	4.51	4.96	0.48	0.45	0.93	38.30	134.58	384.57	104.01	88.41	57.601	64.2	57.4233	56.102025	0.64	2.04	5.25	12.65	
338	03:00	38	26.0	134	38.8	4.04	4.65	5.16	0.61	1.12	38.43	134.65	489.48	81.72	69.46	47.92	64.2	47.92	47.92	48.246584	0.86	3.28	10.29	30.56	
339	04:00	38	20.0	134	40.0	4.04	4.66	5.02	0.62	0.36	0.98	38.33	134.67	497.55	80.39	68.33	70.1	54.927	76.538775	54.263501	0.87	3.39	10.82	32.67	
340	04:00	38	17.0	134	44.5	4.04	4.74	5.45	0.70	1.41	38.28	134.74	562.12	71.16	60.49	48.14	193.579	121.294	144.654	1.01	4.44	16.04	55.33		
341	05:00	38	12.0	134	50.0	4.03	4.60	5.23	0.57	0.63	1.20	38.20	134.93	437.20	87.49	74.37	63.4	200.2295	196.775	201.88591	0.79	2.85	8.40	23.37	
342	05:00	38	8.5	134	54.0	4.00	4.50	4.89	0.50	0.39	0.89	38.14	134.90	400.71	99.42	84.55	64.3	709.1775	704.709	701.17147	0.79	2.85	8.40	23.37	
343	06:00	38	4.7	134	58.0	4.00	4.55	4.77	0.55	0.22	0.77	38.08	134.97	441.06	90.69	77.09	60.82	200.2295	196.775	201.88591	0.79	2.85	8.40	23.37	
344	08:00	38	47.5	135	11.0	3.99	4.34	4.55	0.35	0.21	0.56	37.97	135.18	279.65	143.04	121.58	160	649.949	650.2029	650.410.64	0.45	1.18	2.52	4.97	
345	08:00	38	44.0	135	16.0	3.99	4.43	5.20	0.44	0.77	1.21	37.73	135.27	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
346	09:00	38	40.0	135	19.5	3.95	4.41	5.15	0.46	0.74	1.20	37.67	135.33	368.43	108.57	92.28	693	429.1518	432.800	428.875.42	0.61	1.88	4.71	11.00	
347	10:30	38	28.0	135	30.5	3.86	4.48	5.28	0.62	0.80	1.42	37.47	135.51	497.55	80.39	68.33	70.1	54.927	76.538775	54.263501	0.87	3.39	10.82	32.67	
348	13:00	38	34.0	135	5.0	3.95	4.31	4.90	0.36	0.59	0.95	37.50	135.08	287.72	139.02	118.17	7972	720.093	71.02154	71.3321.72	0.47	1.23	2.67	5.36	
349	20:00	38	34.0	135	5.0	3.98	4.31	5.09	0.33	0.78	1.11	37.57	135.08	263.51	151.80	129.03	333	5.10864	5.101796	5.1441.51	0.42	1.07	2.23	4.28	
350	21:00	38	37.0	134	34.0	3.99	4.34	5.25	0.35	0.91	1.26	37.66	134.90	279.65	143.04	121.58	160	649.949	650.2029	650.410.64	0.45	1.18	2.52	4.97	
351	21:30	38	37.0	134	34.0	3.99	4.34	5.25	0.35	0.91	1.26	37.66	134.90	279.65	143.04	121.58	160	649.949	650.2029	650.410.64	0.45	1.18	2.52	4.97	
352	22:30	38	48.0	134	48.0	4.01	4.41	5.47	0.41	1.06	1.47	37.80	134.80	328.07	121.92	102.03	433	701.723	702.729	702.725.06	0.45	1.54	3.57	7.72	
353	23:00	38	50.8	134	42.5	4.00	4.35	5.05	0.35	0.70	1.05	37.85	134.71	279.65	143.04	121.58	160	649.949	650.2029	650.410.64	0.45	1.18	2.52	4.97	
354	18:30	38	40.5	134	29.5	3.80	4.05	4.45	0.25	0.40	0.65	37.68	134.49	198.95	201.06	170.90	248	949.567	950.1060	941.818.94	0.31	0.71	1.32	2.26	
355	19:00	38	37.0	134	32.5	3.86	4.20	4.60	0.34	0.40	0.74	37.62	134.54	271.58	147.29	125.19	349	579.906	579.910	573.719.58	0.44	1.13	2.37	4.61	
356	19:30	38	37.0	134	38.0	3.84	4.21	5.00	0.37	0.79	1.16	37.51	134.63	295.79	135.23	114.95	584	790.1030	792.285	794.653.79	0.48	1.29	2.84	5.77	
357	20:00	38	22.5	134	40.0	3.83	4.16	4.65	0.33	0.49	0.82	37.48	134.67	263.51	151.80	129.03	333	5.10864	5.101796	5.1441.51	0.42	1.07	2.23	4.28	
358	20:30	38	22.5	134	47.0	3.64	3.87	4.68	0.23	0.81	1.04	37.38	134.78	182.81	218.81	185.99	226	809.504	809.917	809.917.81	0.28	0.63	1.14	1.90	
359	19:30	38	19.0	134	27.0	3.56	4.00	4.90	0.44	0.90	1.34	37.32	134.45	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
360	20:00	38	21.0	134	22.5	3.55	3.99	4.77	0.44	0.78	1.22	37.35	134.36	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
361	01:00	38	34.0	132	41.5	3.74	4.65	5.10	0.91	0.45	1.36	38.57	132.69	731.60	54.67	46.47	1135	506.897	603.5094	61.731.02	1.41	8.55	43.49	214.49	
362	01:30	38	38.0	132	47.0	3.77	4.68	5.47	0.91	0.79	1.70	38.63	132.78	731.60	54.67	46.47	1135	506.897	603.5094	61.731.02	1.41	8.55	43.49	214.49	
363	02:00	38	40.5	132	51.0	3.87	4.65	5.50	0.78	0.85	1.63	38.68	132.85	626.68	63.93	54.25	931	679.4628	681.9036	675.178.6	1.16	5.74	23.59	93.16	
364	02:30	38	36.5	132	38.0	3.80	4.60	5.36	0.80	0.76	1.56	38.61	132.97	642.82	62.23	52.89	961	820.4928	812.0933	885.518.8	1.20	6.11	25.94	105.97	
365	03:00	38	31.5	133	1.5	3.78	4.59	5.78	0.81	1.19	2.00	38.53	133.03	650.89	61.45	52.49	961	820.4928	812.0933	885.518.8	1.20	6.11	25.94	105.97	
366	03:30	38	29.5	133	5.0	3.71	4.50	5.79	1.00	1.79	3.00	38.33	133.09	634.55	63.02	53.56	946	747.476	751.9965	780.187.7	1.12	5.92	24.74	99.36	
367	04:00	38	26.0	133	10.0	3.65	4.41	5.06	0.76	0.65	1.41	38.43	133.17	610.54	65.52	55.69	901	5394.344	541.7295	5660.16.5	1.12	5.39	21.43	81.80	
368	04:30	38	22.5	133	15.0	4.08	4.50	5.38	0.42	0.88	1.30	37.15	134.25	336.14	119.00	101.15	1544	1401.290	1430.004	1466.88.14	0.55	1.60	3.78	8.29	
369	05:00	38	19.0	134	19.0	4.07	4.53	5.40	0.46	0.87	1.33	37.08	134.32	368.43	108.57	92.28	693	429.1518	432.800	428.875.42	0.61	1.88	4.71	11.00	
370	05:30	38	16.0	134	24.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
371	06:00	38	13.0	134	29.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
372	06:30	38	10.0	134	34.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
373	07:00	38	7.0	134	39.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
374	07:30	38	4.0	134	44.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
375	08:00	38	1.0	134	49.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
376	08:30	38	0.0	134	54.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
377	09:00	38	0.0	134	59.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
378	09:30	38	0.0	134	64.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
379	10:00	38	0.0	134	69.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74	4.22	9.56	
380	10:30	38	0.0	134	74.0	4.00	4.40	5.30	0.44	0.86	1.30	36.90	134.10	352.29	113.54	96.51	1468	290.1401	295.405	297.710.29	0.58	1.74			

	Q5000	17	57.5	132	48.0	2.44	4.35	4.50	0.91	0.15	1.06	M	Q	54.67	46.47	135	59.6897	60.35094	61.73102	u	v	w	x	y	z
386	23	30	37	56.0	132	23.0	3.49	4.34	5.00	0.85	0.66	1.51	37.93	132.38	683.18	58.55	49.77	0.039	17.5751	18.26502	111.7891	1.29	7.13	32.84	146.08
387	23	30	37	56.0	132	23.0	3.52	4.40	5.25	0.88	0.85	1.73	38.08	132.33	707.39	56.55	48.06	0.086	39.6302	39.90517	131.42954	1.35	7.17	32.82	177.14
388	00	30	38	0.0	132	20.0	3.62	4.43	5.25	0.88	0.85	1.75	38.08	132.33	707.39	56.55	48.06	0.086	39.6302	39.90517	131.42954	1.35	7.17	32.82	177.14
389	00	30	38	5.0	132	17.0	3.65	4.43	5.25	0.88	0.85	1.75	38.08	132.33	707.39	56.55	48.06	0.086	39.6302	39.90517	131.42954	1.35	7.17	32.82	177.14
390	00	30	38	9.5	132	11.0	3.64	4.43	4.65	0.70	0.31	1.01	38.16	132.38	562.10	71.16	60.49814	1.193579	321.2943	144.6541	1.01	4.44	16.04	55.33	
391	01	30	38	12.0	132	18.0	3.69	4.43	5.00	0.74	0.97	1.71	38.20	132.30	594.40	67.29	57.20872	4.004075	391.5712	45.9843	1.08	5.05	19.47	71.85	
392	01	30	38	17.0	132	24.0	3.71	4.45	5.15	0.74	0.70	1.44	38.28	132.40	594.40	67.29	57.20872	4.004075	391.5712	45.9843	1.08	5.05	19.47	71.85	
KT-87.6-MC 1																									
394	23	43	58.6	138	36.7	4.31	4.72	5.48	0.45	0.74	1.19	43.98	138.61	360.36	111.00	94.35	480.3391	459.353598	45.87233	36	0.60	1.81	4.46	10.25	
395	23	43	58.6	138	35.2	4.40	4.76	5.48	0.42	0.76	1.19	43.98	138.61	360.36	111.00	101.15	444.1401	290.143046	14.6688	14	0.60	1.81	4.46	10.25	
396	23	43	58.6	138	35.2	4.40	4.76	5.48	0.42	0.76	1.19	43.98	138.61	360.36	111.00	101.15	444.1401	290.143046	14.6688	14	0.60	1.81	4.46	10.25	
397	20	43	59.8	138	39.3	4.36	4.40	5.00	0.44	0.60	0.40	44.00	138.66	352.29	113.54	96.51	468.2901	401.293405	297.710	29	0.38	1.74	4.22	9.56	
398	30	44	0.0	138	43.7	4.37	4.75	5.10	0.38	0.35	0.73	44.00	138.73	303.86	131.64	111.80	493.95	8591.087	45.8224	855.008	85	0.49	1.35	3.01	6.21
399	40	43	59.8	138	47.4	4.34	4.80	5.00	0.46	0.20	0.66	44.00	138.75	368.07	108.57	92.28	493.4291	51.0237	0.72879	0.438	75	0.42	0.61	1.88	4.71
400	50	43	59.8	138	51.0	4.48	4.89	5.15	0.41	0.26	0.67	44.00	138.75	368.07	108.57	92.28	493.4291	51.0237	0.72879	0.438	75	0.42	0.61	1.88	4.71
401	60	43	59.8	138	54.9	4.52	5.07	5.30	0.55	0.23	0.78	44.00	138.92	441.06	90.69	77.09	508.08	0.5921	36.0661	293.455	1.06	1.64	7.58	20.42	
402	70	44	0.1	138	59.7	4.50	4.94	5.40	0.46	0.10	0.90	44.00	139.03	352.29	113.54	96.51	468.2901	401.293405	297.710	29	0.38	1.74	4.22	9.56	
403	80	44	0.9	139	1.9	4.49	4.99	5.60	0.50	0.61	1.25	44.02	139.04	190.88	209.56	178.13	5327	8.0053	5.800897	8.001670	8.86	0.50	0.67	1.23	2.07
404	90	44	1.1	139	5.5	4.35	4.93	5.60	0.24	1.35	1.59	44.00	139.14	432.92	94.14	80.02581	9.021984	92.58519	5.94170	9.78	0.72	2.46	6.83	17.83	
405	100	44	0.2	139	8.5	4.01	4.25	5.60	0.24	1.35	1.59	44.00	139.26	432.92	94.14	80.02581	9.021984	92.58519	5.94170	9.78	0.72	2.46	6.83	17.83	
406	110	44	0.1	139	15.4	1.62	2.15	3.10	0.53	0.95	1.48	44.00	139.32	432.92	94.14	80.02581	9.021984	92.58519	5.94170	9.78	0.72	2.46	6.83	17.83	
407	120	43	59.9	139	19.2	2.10	2.64	3.12	0.54	0.98	1.48	44.00	139.36	336.14	119.00	101.15	444.1401	290.143046	14.6688	14	0.60	1.81	4.46	10.25	
408	130	43	59.9	139	23.1	2.12	2.74	3.20	0.42	0.56	0.98	44.00	139.45	336.14	119.00	101.15	444.1401	290.143046	14.6688	14	0.60	1.81	4.46	10.25	
409	140	43	59.9	139	27.1	2.84	2.74	3.48	0.26	0.38	0.64	44.00	139.45	207.02	192.21	164.24	60.0260	0.20201	138.0219	0.78	0.42	0.55	1.60	3.78	
410	150	43	59.9	139	31.2	1.84	2.10	2.48	0.26	0.38	0.64	44.00	139.45	207.02	192.21	164.24	60.0260	0.20201	138.0219	0.78	0.42	0.55	1.60	3.78	
411	160	44	0.1	139	30.9	1.80	2.05	2.45	0.25	0.40	0.65	44.00	139.52	198.95	201.06	170.90	90.248	9.99567	0.901060	9.41	0.84	0.31	1.71	9.78	
412	170	44	0.3	139	34.7	2.20	2.80	3.84	0.60	0.14	1.64	44.01	139.58	481.41	83.09	70.63	67.41	0.12552	40.7889	41.23	0.61	0.84	3.17	9.78	
413	180	44	0.9	139	38.6	2.10	2.78	4.00	0.62	1.28	1.90	44.00	139.64	497.55	88.33	68.33	70.1	5.69276	55.5875	54.263	0.87	0.39	10.82	32.67	
414	190	44	1.9	139	40.3	2.00	2.83	4.45	0.58	0.87	1.45	44.03	139.67	465.57	85.97	73.08	67.47	0.27378	27.7130	27.207	0.81	0.39	10.82	32.67	
415	200	44	1.9	139	40.3	2.00	2.83	4.45	0.58	0.87	1.45	44.03	139.67	465.57	85.97	73.08	67.47	0.27378	27.7130	27.207	0.81	0.39	10.82	32.67	
416	210	44	5.2	139	40.2	1.95	2.40	2.80	0.45	0.40	0.85	44.09	139.67	360.36	111.00	94.35	480.3391	459.353598	45.87233	36	0.60	1.81	4.46	10.25	
417	220	44	8.0	139	35.8	1.98	2.38	3.00	0.60	0.42	1.02	44.14	139.60	481.41	83.09	70.63	67.41	0.12552	40.7889	41.23	0.61	0.84	3.17	9.78	
418	230	44	8.1	139	32.1	2.00	2.60	3.30	0.60	0.70	1.30	44.14	139.56	481.41	83.09	70.63	67.41	0.12552	40.7889	41.23	0.61	0.84	3.17	9.78	
419	240	44	8.6	139	27.7	1.53	1.93	2.40	0.40	0.47	0.87	44.14	139.46	320.00	142.00	106.25	106.25	4.10252	4.10252	4.10252	0.84	1.47	9.37	7.18	
KH-86.2-Line 5																									
420	10	42	50.0	138	56.3	4.86	5.20	5.70	0.34	0.50	0.84	42.83	138.94	271.38	129.29	125.19	49.45	7.99065	7.99101	57.571	0.44	1.13	2.37	4.61	
421	20	42	50.0	139	1.0	4.87	5.15	5.65	0.28	0.50	0.78	42.80	139.07	223.16	79.25	152.36	28.821	1.06971	1.069130	1.023	0.44	1.13	2.37	4.61	
422	30	42	50.1	139	3.9	4.88	5.15	5.55	0.27	0.40	0.67	42.84	139.07	215.89	79.25	152.36	28.821	1.06971	1.069130	1.023	0.44	1.13	2.37	4.61	
423	40	42	49.9	139	7.2	4.86	5.16	5.55	0.30	0.39	0.69	42.83	139.12	239.30	67.16	142.08	0.04	2.9945	2.99914	486.302	0.38	0.93	1.85	3.39	
424	50	42	50.2	139	10.9	4.68	5.00	5.30	0.32	0.30	0.62	42.84	139.18	255.44	156.59	133.10	0.076	4.4923	4.4901	688.331	0.41	1.02	2.10	3.96	
425	60	42	50.3	139	13.9	4.16	4.95	5.44	0.49	0.49	0.98	42.84	139.23	302.64	101.88	86.50	50.3	6.50170	6.50466	6.61	0.66	2.12	5.54	13.55	
426	70	42	50.3	139	17.3	4.14	4.45	5.94	0.31	0.49	0.80	42.84	139.29	327.97	161.70	137.45	53.15	3.69783	3.69913	3.86	0.39	0.97	1.97	3.67	
427	80	42	50.3	139	20.9	3.41	3.72	4.30	0.31	0.38	0.89	42.84	139.35	247.37	161.70	137.45	53.15	3.69783	3.69913	3.86	0.39	0.97	1.97	3.67	
428	90	42	50.3	139	24.5	3.52	3.65	3.97	0.33	0.32	0.65	42.84	139.41	263.51	151.80	129.03	33.7	5.10	5.10	5.10	0.42	1.07	2.23	4.28	
KH-86.2-Line 6																									
429	200	43	0.8	139	22.5	2.90	3.35	4.00	0.45	0.65	1.10	43.01	139.38	360.36	111.00	94.35	480.3391	459.353598	45.87233	36	0.60	1.81	4.46	10.25	
430	230	43	0.8	139	18.0	3.53	3.98	4.55	0.45	0.57	1.02	43.01	139.30	360.36	111.00	94.35	480.3391	459.353598	45.87233	36	0.60	1.81	4.46	10.25	
431	260	43	0.7	139	14.0	4.79	5.35	5.39	0.56	0.95	1.43	43.01	139.23	311.93	128.23	109.00	0.047	2.991135	2.992268	3.93	0.38	0.94	1.31	6.68	
432	290	43	0.5	139	9.7	4.75	5.05	5.50	0.45	0.75	1.30	43.01	139.16	239.30	67.16	142.08	0.04	2.9945	2.99914	486.302	0.38	0.93	1.85	3.39	
433	320	43	0.5	139	5.3	4.78	5.19	5.80	0.41	0.61	1.02	43.01	139.09	328.07	121.92	103.64	43.2	0.017	0.017	0.62	0.49	1.35	3.01	7.72	
434	350	43	0.5	139	1.1	4.76	5.14	5.95	0.38	0.81	1.19	43.01	139.02	303.86	131.92	103.64	43.2	0.017	0.017	0.62	0.49	1.35	3.01	7.72	
435	380	43	0.6	138	2.6	3.42	3.90	4.40	0.48	0.10	0.58	40.10	138.04	384.57	104.01	88.41	51.7	5.701	6.42	5.723	0.64	2.04	5.25	12.65	
436	410	43	7.7	138	5.6	3.63	4.10	4.20	0.47	0.10	0.57	40.13	138.09	376.50	106.24	90.31	50.5	5.159	5.3	5.159	0.63	1.96	4.97		

[illegible]

496	A	100	22.8	134	51.8	4.00	6.02	0.62	0.83	1.46	38.38	134.91	70.11	67.24	151.928	61.928	62.28	170.6	0.89	3.51	11.37	34.91		
497	A	200	38	52.3	134	49.3	4.00	0.62	0.83	1.46	38.38	134.91	70.11	67.24	151.928	61.928	62.28	170.6	0.89	3.51	11.37	34.91		
498	A	300	38	52.3	134	49.3	4.00	0.62	0.83	1.46	38.38	134.91	70.11	67.24	151.928	61.928	62.28	170.6	0.89	3.51	11.37	34.91		
499	A	400	38	52.3	134	49.3	4.00	0.62	0.83	1.46	38.38	134.91	70.11	67.24	151.928	61.928	62.28	170.6	0.89	3.51	11.37	34.91		
500	A	500	38	52.3	134	49.3	4.00	0.62	0.83	1.46	38.38	134.91	70.11	67.24	151.928	61.928	62.28	170.6	0.89	3.51	11.37	34.91		
501	A	594	38	52.3	134	49.3	4.00	0.62	0.83	1.46	38.38	134.91	70.11	67.24	151.928	61.928	62.28	170.6	0.89	3.51	11.37	34.91		
502	DELPS-A	300	39	3.6	136	32.5	3.40	0.40	0.55	0.48	1.03	38.50	134.71	441.06	90.69	147.04	293.229	707.229	1393.222524	0.37	0.88	1.73	3.13	
503	A	400	38	59.8	136	28.1	3.50	3.75	4.52	0.25	0.77	1.02	39.06	136.54	231.23	172.99	170.9248	949.567	950.1060	941.818	0.31	1.32	2.26	
504	A	500	38	57.8	136	26.1	3.52	3.79	4.50	0.27	0.71	0.98	38.96	136.43	215.09	183.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
505	A	600	38	53.6	136	22.5	3.58	3.82	4.32	0.27	0.74	0.74	38.89	136.37	190.88	185.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
506	A	700	38	53.6	136	20.5	3.58	3.82	4.32	0.27	0.74	0.74	38.89	136.37	190.88	185.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
507	A	800	38	51.6	136	20.5	3.58	3.82	4.32	0.27	0.74	0.74	38.89	136.37	190.88	185.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
508	A	900	38	49.8	136	18.1	3.59	3.86	4.41	0.27	0.55	0.82	38.83	136.31	239.30	167.99	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
509	A	1000	38	45.8	136	13.5	3.60	3.90	4.35	0.30	0.45	0.75	38.76	136.23	239.30	167.99	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
510	A	1200	38	44.2	136	10.1	3.60	3.89	4.30	0.29	0.61	0.90	38.74	136.13	231.23	172.99	147.04293	229707	2291.393	222524	0.37	0.88	1.73	
511	A	1300	38	42.8	136	7.9	3.60	3.90	4.61	0.30	0.71	1.01	38.71	136.13	239.30	167.99	142.08304	299745	2991.486	302732	0.38	0.93	1.85	
512	A	1400	38	39.7	136	5.3	3.60	4.05	4.51	0.45	0.46	0.91	38.66	136.04	360.36	110.24	94.358480	3591459	3535398	382733	0.60	1.81	4.46	
513	A	1600	38	36.0	135	59.8	3.61	4.08	4.82	0.47	0.74	1.21	38.63	136.00	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
514	A	1700	38	36.0	135	57.1	3.61	4.04	4.74	0.43	0.70	1.13	38.60	135.96	344.22	116.21	98.78456	2201345	213221.21	217181.22	0.57	1.67	3.99	
515	A	1800	38	37.7	135	48.7	3.98	4.20	4.60	0.42	0.60	0.92	38.46	135.81	374.3	238.92	103.6432	0701237	0728791	076225	0.54	1.54	3.57	
516	A	2000	38	25.7	135	16.6	3.97	4.23	4.90	0.26	0.67	0.93	38.43	135.78	207.02	193.22	194.58216	729474	729851	7291401	0.27	0.59	1.06	
517	A	2200	38	25.7	135	14.5	3.99	4.25	4.90	0.26	0.67	0.93	38.43	135.78	207.02	193.22	214.38155	38941.5	389727.8	3891167.56	0.25	0.52	0.91	
518	A	2400	38	21.5	135	12.5	3.99	4.24	5.00	0.25	0.76	1.01	38.36	135.71	158.95	257.22	170.90248	949567	9501060	941818.94	0.31	0.75	1.41	
519	A	2600	38	19.3	135	10.2	3.92	4.18	4.90	0.26	0.72	0.98	38.32	135.67	207.02	193.22	164.24260	020607	0201138	021978.02	0.33	0.75	1.41	
520	A	2800	38	17.1	135	7.8	3.91	4.20	4.91	0.29	0.71	1.00	38.29	135.63	231.23	172.99	147.04293	229707	2291.393	222524	0.37	0.88	1.73	
521	A	2600	38	17.1	135	7.8	3.91	4.20	4.91	0.29	0.71	1.00	38.29	135.63	231.23	172.99	147.04293	229707	2291.393	222524	0.37	0.88	1.73	
522	A	2800	38	12.9	135	32.9	3.91	4.19	4.89	0.28	0.70	0.98	38.22	135.55	223.16	179.25	152.36281	1606871	1601303	162330.15	0.35	0.84	1.62	
523	A	2900	38	11.1	135	30.2	3.91	4.21	4.60	0.30	0.39	0.69	38.18	135.50	239.30	167.16	142.08304	299745	2991.486	302732	0.38	0.93	1.85	
524	A	3000	38	9.2	135	27.2	3.89	4.23	4.50	0.34	0.27	0.61	38.15	135.45	271.38	147.29	125.19349	579906	5791910	573719.58	0.44	1.13	2.37	
525	A	3300	38	3.7	135	18.8	3.97	4.40	4.90	0.43	0.50	0.93	38.06	135.31	344.22	116.21	98.78456	2201345	213221.21	217181.22	0.57	1.67	3.99	
526	A	3400	38	1.6	135	16.4	3.98	4.45	5.00	0.47	1.05	1.52	38.03	135.27	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
527	A	3500	37	59.5	135	13.8	3.97	4.43	5.00	0.46	1.07	1.53	37.99	135.23	368.43	108.57	92.28493	4291518	423800	428875.42	0.61	1.88	4.71	
528	A	3600	37	57.1	135	11.6	3.97	4.41	5.47	0.44	1.06	1.50	37.96	135.19	352.29	133.64	96.51468	2901401	293405	297710.29	0.38	1.74	4.22	
529	A	3700	37	55.6	135	9.0	3.96	4.34	4.75	0.38	0.41	0.79	37.93	135.15	303.86	31.64	111.80395	8591087	852422	855008.85	0.49	1.35	3.01	
530	A	4000	37	47.9	134	59.5	3.94	4.40	4.90	0.46	0.50	0.96	37.80	134.99	368.43	108.57	92.28493	4291518	423800	428875.42	0.61	1.88	4.71	
531	A	4100	37	46.0	134	56.8	3.96	4.47	5.30	0.51	0.83	1.34	37.77	134.95	408.78	97.85	93.17555	7801841	7849695	7712549.7	0.69	2.29	6.16	
532	A	4200	37	44.1	134	54.6	3.96	4.45	5.35	0.49	0.90	1.39	37.73	134.91	392.64	101.88	96.59530	6407107	644466	6410934.6	0.66	2.12	5.54	
533	A	4300	37	42.1	134	52.3	3.97	4.42	5.32	0.45	0.90	1.35	37.70	134.87	360.36	110.00	94.35480	3591459	3535598	358273.36	0.60	1.81	4.46	
534	A	4500	37	40.1	134	50.0	3.95	4.41	5.20	0.46	0.79	1.25	37.67	134.83	368.43	108.57	92.28493	4291518	423800	428875.42	0.61	1.88	4.71	
535	DELPS-D&E	300	39	30.9	137	42.3	3.49	3.70	4.59	0.21	0.89	1.10	39.51	137.71	166.66	240.00	204.00205	660444	660787	6601280.66	0.36	0.55	0.98	
536	A	330	39	32.4	137	44.6	3.49	3.76	4.24	0.27	0.48	0.75	39.54	137.24	175.09	185.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
537	A	340	39	32.4	137	44.6	3.49	3.76	4.24	0.27	0.48	0.75	39.54	137.24	175.09	185.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
538	A	350	39	32.4	137	44.6	3.49	3.76	4.24	0.27	0.48	0.75	39.54	137.24	175.09	185.97	158.08270	089636	0891.219	0821.18	0.34	0.79	1.51	
539	A	360	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
540	A	370	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
541	A	380	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
542	A	390	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
543	A	400	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
544	A	410	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
545	A	420	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
546	A	430	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
547	A	440	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
548	A	450	39	31.1	137	50.4	3.51	3.98	4.30	0.47	0.32	0.79	39.58	137.84	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.71
549	A	460	39																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X		
551	3000	40	12.8	138	15.5	3.77	4.12	4.40	0.35	0.28	0.63	40.21	138.24	279.65	143.04	121.58	360.64	949.045	620.029	6540.10	64	0.45	1.18	2.52	4.97	
552	4000	40	15.4	138	15.5	3.7	4.06	4.40	0.36	0.24	0.60	40.26	138.26	287.32	139.02	118.17	372.70	0.93	7.12	51.92	14.32	0.42	1.23	2.67	5.36	
553	5000	40	17.7	138	16.0	3.7	4.1	4.3	0.33	0.20	0.63	40.30	138.28	287.51	151.80	129.03	337.51	10.86	4.51	101.79	5.14	0.47	1.07	2.23	4.28	
DEL P85 CARD																										
554	50	39	10.1	136	38.3	3.47	3.60	4.18	0.13	0.58	0.71	39.17	136.64	102.10	391.77	333.01	123.09	238	100	382	100	0.61	0.30	0.48	0.70	
555	100	39	10.3	136	38.3	3.49	3.64	4.30	0.15	0.66	0.81	39.17	136.66	118.24	338.29	287.55	143.23	292	85	230	468	0.70	0.36	0.58	0.88	
556	200	39	11.3	136	43.3	3.48	3.63	4.33	0.15	0.70	0.85	39.19	136.72	118.24	338.29	287.55	143.23	292	85	230	468	0.70	0.36	0.58	0.88	
557	300	39	12.2	136	46.7	3.40	3.54	3.90	0.14	0.36	0.50	39.20	136.78	110.17	363.07	308.61	113.16	169	61	169	24	0.33	0.33	0.79	0.79	
558	400	39	12.9	136	50.3	3.40	3.60	4.20	0.20	0.60	0.80	39.23	136.84	158.39	251.22	214.38	105	58	94	167	280	0.25	0.55	0.91	1.45	
559	500	39	13.8	136	53.3	3.38	3.59	4.25	0.21	0.66	0.87	39.23	136.90	166.36	240.00	204.02	105	58	94	167	280	0.26	0.55	0.98	1.59	
560	600	39	14.3	136	57.2	3.30	3.57	4.33	0.27	0.76	1.01	39.25	136.95	185.09	185.09	138.08	109	63	60	181	280	0.34	0.79	1.51	2.67	
561	700	39	16.2	137	34.1	3.21	3.62	4.46	0.41	0.84	1.25	39.27	137.01	328.07	121.92	103.64	32	0.70	1.23	72.89	0.72	0.54	3.57	7.72		
562	800	39	17.5	137	31.1	3.16	3.60	4.47	0.44	0.87	1.31	39.29	137.05	352.59	116.24	96.51	468	200	401	293	405	0.58	1.74	4.22	9.56	
563	900	39	20.3	137	32.0	3.23	3.70	4.70	0.47	1.00	1.47	39.34	137.20	376.50	103.54	90.31	505	5	1579	5	951	0.63	1.96	4.97	11.79	
564	1000	39	21.3	137	31.1	3.27	3.70	4.90	0.43	1.20	1.63	39.35	137.25	387.22	118.22	98.78	456	220	345	213	221	0.47	1.67	3.99	8.90	
565	1200	39	23.1	137	21.6	3.24	3.60	4.95	0.36	1.35	1.71	39.39	137.36	287.72	139.02	118.17	372.70	0.93	7.12	51.92	14.32	0.42	1.23	2.67	5.36	
566	1400	39	24.2	137	21.6	3.32	3.61	4.88	0.29	1.27	1.56	39.40	137.41	231.06	173.93	172.99	429	229	391	393	225	0.37	0.88	1.73	3.13	
567	1600	39	25.2	137	27.7	3.37	3.62	4.86	0.25	1.24	1.49	39.42	137.46	198.95	201.06	170.90	429	229	391	393	225	0.37	0.88	1.73	3.13	
568	1800	39	26.2	137	30.7	3.42	3.64	4.89	0.22	1.25	1.47	39.44	137.51	174.73	228.92	194.58	216	79	474	298	51	0.31	1.32	2.26	2.26	
569	1900	39	27.1	137	34.1	3.45	3.65	4.60	0.20	0.95	1.15	39.45	137.57	158.59	252.22	214.38	105	58	94	167	280	0.27	0.59	1.06	1.74	
570	1800	39	27.1	137	34.1	3.45	3.65	4.60	0.20	0.95	1.15	39.45	137.57	158.59	252.22	214.38	105	58	94	167	280	0.27	0.59	1.06	1.74	
571	1900	39	28.4	137	36.8	3.49	3.69	4.75	0.20	1.06	1.26	39.47	137.61	158.59	252.22	214.38	105	58	94	167	280	0.27	0.59	1.06	1.74	
572	2000	39	29.6	137	39.7	3.50	3.70	4.69	0.20	0.99	1.19	39.49	137.66	158.59	252.22	214.38	105	58	94	167	280	0.27	0.59	1.06	1.74	
JAPEX Y85-1																										
573	0	41	7.5	137	19.0	4.72	5.06	6.07	0.34	1.01	1.35	41.13	137.28	271.58	147.29	125.19	349	579	0.06	5.79	0.10	0.45	1.13	2.37	4.61	
574	200	41	5.0	137	19.0	4.71	5.02	6.00	0.31	0.98	1.29	41.08	137.32	247.37	161.70	137.45	351	369	783	169	584	362	0.39	0.97	1.97	3.67
575	400	41	5.0	137	21.5	4.70	5.00	5.90	0.30	0.90	1.20	41.05	137.36	239.30	161.70	142.08	354	369	783	169	584	362	0.39	0.93	1.85	3.39
576	600	41	5.0	137	23.5	4.67	4.98	5.97	0.31	0.99	1.30	41.01	137.39	247.37	161.70	137.45	351	369	783	169	584	362	0.39	0.97	1.97	3.67
577	800	40	58.5	137	25.5	4.61	4.94	5.94	0.33	1.00	1.33	40.98	137.43	263.51	151.80	129.03	337.51	10.86	4.51	101.79	5.14	0.47	1.07	2.23	4.28	
578	1000	40	56.5	137	28.0	4.54	4.92	5.86	0.38	0.94	1.32	40.94	137.47	303.86	131.64	111.89	395	859	1087	85	242	85	0.49	1.35	3.01	6.21
579	1200	40	54.2	137	30.0	4.52	4.90	5.60	0.38	0.70	1.08	40.90	137.50	303.86	131.64	111.89	395	859	1087	85	242	85	0.49	1.35	3.01	6.21
580	1400	40	52.5	137	32.0	4.52	4.90	5.30	0.38	0.40	0.78	40.88	137.53	303.86	131.64	111.89	395	859	1087	85	242	85	0.49	1.35	3.01	6.21
581	1600	40	50.0	137	34.5	4.49	4.85	5.56	0.36	0.71	1.07	40.83	137.58	287.72	139.02	118.17	372.70	0.93	7.12	51.92	14.32	0.42	1.23	2.67	5.36	
582	1800	40	48.0	137	36.5	4.44	4.80	5.46	0.36	0.66	1.02	40.80	137.61	287.72	139.02	118.17	372.70	0.93	7.12	51.92	14.32	0.42	1.23	2.67	5.36	
583	2000	40	46.0	137	38.5	4.41	4.79	5.46	0.36	0.67	1.05	40.77	137.64	303.86	131.64	111.89	395	859	1087	85	242	85	0.49	1.35	3.01	6.21
584	2000	40	43.5	137	41.0	4.39	4.78	5.40	0.39	0.12	0.51	40.73	137.68	311.93	128.23	109.04	079	1135	922	568	922	387	0.51	1.41	3.19	6.68
585	2600	40	39.3	137	45.0	4.44	4.97	5.51	0.53	0.54	1.07	40.66	137.75	424.92	94.14	80.02	581	920	1984	025	519	14	0.72	2.46	6.83	17.83
586	2800	40	37.5	137	47.5	4.41	4.82	5.13	0.41	0.31	0.72	40.63	137.79	328.07	121.92	103.64	32	0.70	1.23	72.89	0.72	0.54	3.57	7.72		
587	3000	40	30.3	137	54.0	4.31	4.60	4.80	0.29	0.20	0.49	40.51	137.90	231.23	172.99	147.04	293	079	229	391	393	0.37	0.88	1.73	3.13	
588	3400	40	28.5	137	56.0	4.31	4.68	4.82	0.37	0.14	0.51	40.48	137.93	295.79	135.23	114.95	384	700	1039	702	285	0.48	1.29	2.84	5.77	
589	3600	40	26.5	137	58.0	4.34	4.72	4.80	0.38	0.08	0.46	40.44	137.97	303.86	131.64	111.89	395	859	1087	85	242	85	0.49	1.35	3.01	6.21
590	3800	40	24.2	138	62.0	4.37	4.78	5.00	0.41	0.22	0.63	40.40	138.00	328.07	121.92	103.64	32	0.70	1.23	72.89	0.72	0.54	3.57	7.72		
591	4000	40	22.5	138	64.0	4.30	4.75	4.97	0.45	0.22	0.67	40.38	138.04	366.11	111.90	94.35	480	359	459	353	598	0.60	1.84	4.46	10.25	
592	4200	40	20.0	138	66.0	4.21	4.68	4.90	0.47	0.22	0.69	40.33	138.08	376.50	106.24	90.31	505	5	1579	5	951	0.55	1.96	4.97	11.79	
593	4400	40	18.0	138	68.0	4.12	4.54	4.57	0.42	0.03	0.45	40.30	138.11	336.14	119.00	101.15	1444	1401	290	1430	64	0.65	3.78	8.29	17.83	
594	4600	40	15.8	138	70.0	4.03	4.49	4.71	0.46	0.22	0.68	40.26	138.15	368.43	108.57	92.28	493	429	1518	423	600	0.45	1.88	4.71	11.00	
595	4800	40	13.5	138	72.0	3.99	4.34	4.56	0.35	0.22	0.57	40.23	138.18	376.50	106.24	90.31	505	5	1579	5	951	0.55	1.96	4.97	11.79	
596	5000	40	11.8	138	74.0	3.87	4.20	4.48	0.33	0.28	0.61	40.19	138.22	263.51	151.80	129.03	337.51	10.86	4.51	101.79	5.14	0.47	1.07	2.23	4.28	
597	5200	40	7.0	138	77.5	3.61	4.00	4.25	0.39	0.25	0.64	40.12	138.29</													

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
606	JAPX	Y85	65	135	26.3	3.38	4.49	5.54	0.61	1.05	1.66	37.42	135.44	489.48	81.72	69.46887	4.792642	4.78298	482658.4	0.86	3.28	10.29	30.56	
607	1600	37	25.0	135	24.2	3.89	4.45	5.43	0.56	1.00	1.56	37.45	135.40	449.13	89.06	75.70621	1.302215	1.26439	1217634.1	0.77	2.75	7.98	21.85	
608	1800	37	27.0	135	22.0	3.90	4.50	5.36	0.60	1.08	1.68	37.49	135.37	481.41	81.09	70.63674	1.025572	1.07889	1423061.4	0.84	3.27	9.78	28.58	
609	2000	37	29.0	135	20.0	3.91	4.41	5.50	0.59	1.09	1.59	37.52	135.33	440.11	99.82	84.58343	1.091773	1.04709	703171.7	0.68	2.20	5.84	14.52	
610	2200	37	31.0	135	18.0	3.91	4.40	5.47	0.49	1.07	1.56	37.55	135.30	392.64	111.00	86.90530	1.601407	1.64466	6410934.6	0.66	2.12	5.54	13.25	
611	2400	37	33.0	135	16.0	3.92	4.37	5.26	0.45	0.89	1.34	37.59	135.27	360.36	111.00	94.34800	3.591459	3.53598	358273.36	0.60	1.81	4.46	10.25	
612	2600	37	35.0	135	14.0	3.93	4.30	4.82	0.37	0.52	0.89	37.63	135.23	295.79	135.23	114.95384	7.901039	792285	794653.79	0.48	1.29	2.84	5.77	
613	2800	37	37.0	135	12.0	3.94	4.36	4.97	0.42	0.61	1.00	37.66	135.20	336.14	19.00	101.15444	1401.290	143046	146688.14	0.55	1.60	3.78	8.29	
614	3000	37	39.0	135	10.0	3.95	4.39	5.00	0.44	0.61	1.05	37.69	135.16	352.29	13.54	96.51468	2901.401	293405	297710.29	0.58	1.74	4.22	9.56	
615	3200	37	41.0	135	9.5	3.95	4.39	5.00	0.44	0.61	1.05	37.73	135.13	352.29	13.54	96.51468	2901.401	293405	297710.29	0.58	1.74	4.22	9.56	
616	3400	37	43.0	135	7.5	3.96	4.39	5.00	0.44	0.61	1.05	37.73	135.13	352.29	13.54	96.51468	2901.401	293405	297710.29	0.58	1.74	4.22	9.56	
617	3600	37	46.0	135	5.0	3.96	4.28	4.85	0.32	0.57	0.89	37.77	135.08	255.44	136.59	133.10326	440824	4401688	433193.43	0.41	1.02	2.23	4.28	
618	3800	37	48.0	135	3.0	3.97	4.30	4.45	0.33	0.15	0.48	37.80	135.05	263.51	151.80	129.03337	510864	510176	513447.51	0.42	1.07	2.23	4.28	
619	4000	37	50.0	135	1.0	3.98	4.59	5.10	0.61	0.51	1.12	37.83	135.02	489.48	81.72	69.46887	4.792642	4.78298	482658.4	0.86	3.28	10.29	30.56	
620	4200	37	52.0	134	59.0	3.99	4.61	5.29	0.62	0.68	1.30	37.87	134.98	497.55	80.39	68.33701	5492716	558725	5426360.5	0.87	3.39	10.82	32.67	
621	4400	37	54.0	134	56.6	3.99	4.61	5.37	0.62	0.76	1.38	37.90	134.94	497.55	80.39	68.33701	5492716	558725	5426360.5	0.87	3.39	10.82	32.67	
622	4600	37	56.0	134	54.2	4.00	4.60	5.30	0.60	0.79	1.39	37.93	134.90	481.41	81.09	70.63674	1.025572	1.07889	1423061.4	0.84	3.27	9.78	28.58	
623	4800	37	58.0	134	52.5	4.00	4.60	5.34	0.60	0.74	1.34	37.97	134.88	481.41	81.09	70.63674	1.025572	1.07889	1423061.4	0.84	3.27	9.78	28.58	
624	5000	38	2.5	134	50.0	3.99	4.69	5.15	0.70	0.46	1.16	38.01	134.83	362.12	71.16	60.49814	11935579	1212943	144654.1	1.01	4.44	16.04	55.33	
625	5200	38	2.5	134	48.0	4.00	4.56	5.04	0.56	0.48	1.04	38.04	134.80	449.13	89.06	75.70621	1.302215	1.26439	1217634.1	0.77	2.75	7.98	21.85	
626	5400	38	4.5	134	46.0	3.99	4.57	5.94	0.58	1.37	1.95	38.08	134.77	465.27	83.75	70.68647	2702378	2717330	2727010.2	0.81	2.95	8.64	25.00	
627	5600	38	7.0	134	43.5	3.98	4.50	4.81	0.52	0.31	0.83	38.12	134.73	416.85	95.96	81.56568	8491971	845233	83439.8	0.71	2.37	6.49	16.66	
628	5800	38	11.0	134	41.5	3.97	4.22	4.60	0.25	0.38	0.63	38.15	134.69	198.95	201.06	170.90248	949567	9501060	941818.94	0.31	0.71	1.32	2.26	
629	6000	38	15.0	134	39.0	3.70	3.98	4.30	0.28	0.32	0.63	38.18	134.65	223.16	179.25	152.36281	1.60671	1.601303	162330.15	0.35	0.84	1.62	2.89	
630	6200	38	19.0	134	37.0	3.61	3.98	4.20	0.37	0.22	0.59	38.22	134.62	295.79	135.23	114.95384	7.901039	792285	794653.79	0.48	1.29	2.84	5.77	
631	6400	38	32.0	134	17.5	2.86	3.30	3.70	0.40	0.40	0.84	38.53	134.29	352.29	13.54	96.51468	2901.401	293405	297710.29	0.58	1.74	4.22	9.56	
632	8200	38	34.0	134	15.5	2.91	3.21	3.40	0.30	0.19	0.49	38.57	134.26	239.30	67.16	142.08304	299745	2991486	925732.30	0.38	0.93	1.85	3.39	
633	8400	38	36.0	134	13.0	2.86	3.25	3.64	0.39	0.39	0.78	38.60	134.22	311.93	128.23	109.00407	9291135	92268	925387.93	0.51	1.41	3.19	6.68	
634	8600	38	38.0	134	11.0	2.61	2.97	3.07	0.36	0.10	0.46	38.63	134.18	287.72	139.02	118.17372	7209933	7192154	714321.72	0.47	1.23	2.67	5.36	
635	8800	38	40.5	134	9.0	2.44	2.85	2.93	0.41	0.08	0.49	38.68	134.15	328.07	121.92	103.64432	0701237	072879	076225.06	0.54	1.54	3.57	7.72	
636	9000	38	42.0	134	6.5	2.30	2.77	3.16	0.47	0.39	0.86	38.70	134.11	376.50	106.24	90.31	505.51	1579.5	4011.5	9515.5	0.63	1.96	4.97	11.79
637	9200	38	44.5	134	4.5	2.17	2.53	2.69	0.36	0.16	0.52	38.74	134.08	287.72	139.02	118.17372	7209933	7192154	714321.72	0.47	1.23	2.67	5.36	
638	JAPX	Y85	B	134	54.5	1.92	2.16	2.50	0.24	0.34	0.58	38.67	133.91	190.88	209.56	178.13237	880533	880987	8801670.88	0.30	0.67	1.23	2.07	
639	2700	38	40.0	133	54.5	1.92	2.16	2.50	0.24	0.34	0.58	38.67	133.91	190.88	209.56	178.13237	880533	880987	8801670.88	0.30	0.67	1.23	2.07	
640	2900	38	42.5	133	57.5	1.97	2.36	2.70	0.39	0.34	0.73	38.71	133.96	311.93	128.23	109.00407	9291135	92268	925387.93	0.51	1.41	3.19	6.68	
641	3100	38	43.0	134	0.5	2.02	2.42	2.95	0.40	0.53	0.93	38.72	134.01	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
642	3300	38	44.0	134	3.5	2.11	2.45	2.90	0.34	0.45	0.79	38.73	134.06	271.58	147.29	125.19349	579906	5791910	573719.58	0.44	1.13	2.37	4.61	
643	3500	38	45.0	134	6.5	2.37	2.85	3.30	0.48	0.45	0.93	38.75	134.11	384.57	104.01	88.41517	5701642	574233	5610202.5	0.64	2.04	5.25	12.65	
644	3700	38	46.5	134	9.5	2.58	3.00	3.36	0.42	0.36	0.78	38.78	134.16	336.14	19.00	101.15444	1401.290	143046	146688.14	0.55	1.60	3.78	8.29	
645	3900	38	47.5	134	12.5	2.56	2.98	3.23	0.42	0.25	0.67	38.79	134.21	279.65	143.04	101.15444	1401.290	143046	146688.14	0.55	1.60	3.78	8.29	
646	4100	38	49.0	134	16.0	2.64	2.99	3.20	0.35	0.21	0.56	38.82	134.27	279.65	143.04	121.58360	649949	6502029	654010.64	0.45	1.18	2.52	4.97	
647	JAPX	Y85	B-1	136	9.0	2.20	2.53	2.76	0.33	0.23	0.56	39.57	136.15	263.51	151.80	129.03337	510864	510176	513447.51	0.42	1.07	2.23	4.28	
648	3900	39	34.0	136	9.0	2.20	2.53	2.76	0.33	0.23	0.56	39.57	136.15	263.51	151.80	129.03337	510864	510176	513447.51	0.42	1.07	2.23	4.28	
649	4100	39	35.5	136	12.5	2.37	2.74	3.15	0.37	0.41	0.78	39.59	136.21	295.79	135.23	114.95384	7.901039	792285	794653.79	0.48	1.29	2.84	5.77	
650	4300	39	40.0	136	25.0	3.32	3.75	4.03	0.43	0.28	0.71	39.67	136.42	344.22	116.21	98.78456	2201.345	213221	217181.22	0.57	1.67	3.99	8.90	
651	7000	39	53.0	136	27.5	2.57	2.88	3.11	0.31	0.23	0.54	39.88	136.46	295.79	135.23	137.45315	369783	3691584	362955.37	0.39	0.97	1.97	3.67	
652	7200	39	54.0	137	0.1	2.61	2.98	3.10	0.37	0.12	0.49	39.90	137.02	295.79	135.23	114.95384	7.901039	792285	794653.79	0.48	1.29	2.84	5.77	
653	7400	39	55.0	137	4.0	2.80	3.19	3.36	0.39	0.17	0.56	39.92	137.07	311.93	128.23	109.00407	9291135	92268	925387.93	0.51	1.41	3.19	6.68	
654	7600	39	56.5	137	7.0	3.03	3.40	3.60	0.37	0.20	0.57	39.94	137.12	295.79	135.23	114.95384	7.901039	792285	794653.79	0.48	1.29	2.84	5.77	
655	7800	39	57.5	137	10.0	3.07	3.40	3.60	0.37	0.20	0.57	39.94	137.12	295.79	135.23	114.95384	7.901039	792285	794653.79	0.48	1.29	2.84	5.77	
656	8000	39	59.0	137	13.5	3.08	3.52	3.74	0.44	0.22	0.66	39.98	137.23	352.29	13.54	96.51468	2901.401	293405	297710.29	0.58	1.74	4.22	9.56	
657																								

661	9000	40	4.5	137	29.0	3.18	3.59	3.90	0.41	0.31	0.72	40.08	137.48	328.07	121.92	103.64	432.0701	237.07	287.97	6225.06	0.54	1.54	3.57	7.72	
662	JAPEX Y85-B-3	4000	40	30.0	138	40.0	4.30	4.70	5.00	0.40	0.30	0.70	40.50	138.67	328.07	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
663		4500	40	31.5	138	43.0	4.40	4.70	5.00	0.36	0.26	0.56	40.53	138.72	327.02	139.02	118.17	7372.720993	7192154	714321.72	0.47	1.23	2.67	5.36	
664		4700	40	32.5	138	46.0	4.40	4.80	5.03	0.42	0.21	0.63	40.56	138.71	336.14	119.00	101.54444	1401290	143046	146688.14	0.57	1.60	3.78	8.29	
665		4900	40	33.5	138	48.5	4.42	4.80	5.00	0.38	0.20	0.58	40.56	138.81	303.86	131.64	111.89395	8591087	852423	855008.85	0.49	1.35	3.01	6.21	
666		5100	40	35.0	138	52.0	4.40	5.00	5.20	0.60	0.22	0.82	40.58	138.88	481.41	69.17	70.6374	4102552	407889	4121061.4	0.84	3.17	9.78	28.58	
667		5300	40	36.0	138	56.0	4.38	5.10	5.20	0.72	0.20	0.82	40.60	138.93	578.26	83.09	58.80842	2603820	2614264	250893.2	1.05	4.74	17.68	63.06	
668	KT-88-9 @107	40	19.9	138	34.3	3.55	3.91	4.12	0.36	0.21	0.57	40.33	138.57	287.72	139.02	118.17372	720993	7192154	714321.72	0.47	1.23	2.67	5.36		
669		100	40	23.3	138	26.7	3.54	3.81	3.94	0.27	0.13	0.40	40.39	138.45	255.49	185.97	158.08270	089636	0891219	082148.09	0.34	0.79	1.51	2.96	
670		200	40	20.6	138	22.9	3.77	4.09	4.28	0.32	0.19	0.51	40.34	138.38	215.04	156.59	133.10326	440823	4401688	431193.43	0.41	1.02	2.10	3.96	
671		300	40	19.2	138	19.5	3.81	4.19	4.38	0.38	0.19	0.57	40.32	138.33	203.86	147.29	125.19349	5709065	5701910	573719.58	0.44	1.13	2.37	4.61	
672		400	40	17.8	138	16.4	3.87	4.21	4.45	0.34	0.24	0.58	40.30	138.27	271.58	137.29	125.19349	5709065	5701910	573719.58	0.44	1.13	2.37	4.61	
673		500	40	15.4	138	10.1	4.02	4.48	4.80	0.46	0.32	0.78	40.28	138.17	368.43	108.57	92.28493	4291518	423800	423875.42	0.61	1.88	4.71	11.00	
674		600	40	14.1	138	7.2	4.00	4.40	4.53	0.40	0.13	0.53	40.24	138.12	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
675	KT-88-9 @108	1000	40	15.2	138	6.7	4.05	4.49	4.69	0.44	0.20	0.64	40.23	138.11	352.29	113.54	96.51468	2901401	2934405	297710.29	0.58	1.74	4.22	9.56	
676		1100	40	13.6	138	9.8	4.01	4.43	4.67	0.42	0.24	0.66	40.23	138.16	336.14	119.00	101.54444	1401290	143046	146688.14	0.55	1.60	3.78	8.29	
677		1200	40	12.0	138	13.1	3.90	4.27	4.49	0.32	0.27	0.59	40.20	138.22	255.44	156.59	133.10326	440823	4401688	431193.43	0.41	1.02	2.10	3.96	
678		1300	40	10.3	138	16.2	3.73	4.07	4.30	0.34	0.23	0.57	40.17	138.27	271.58	147.29	125.19349	5709065	5701910	573719.58	0.44	1.13	2.37	4.61	
679		1400	40	8.6	138	18.8	3.58	3.95	4.22	0.37	0.27	0.64	40.14	138.31	295.79	135.23	114.95384	7901039	792285	794653.79	0.48	1.29	2.84	5.77	
680		1500	40	6.3	138	21.6	3.22	3.55	3.72	0.33	0.17	0.50	40.11	138.36	263.51	151.80	129.03337	510864	5101796	513447.51	0.42	1.07	2.23	4.28	
681	KT-88-9 @109	1700	40	8.1	138	22.7	3.34	3.60	3.80	0.26	0.20	0.46	40.13	138.38	207.02	193.22	164.24260	020602	020201	138.021978.02	0.33	0.75	1.41	2.45	
682		1800	40	9.8	138	19.4	3.54	3.99	4.24	0.45	0.25	0.70	40.16	138.32	360.36	111.00	94.35480	3591459	353598	3538273.36	0.60	1.81	4.46	10.25	
683		1900	40	11.8	138	16.3	3.72	4.10	4.39	0.38	0.22	0.67	40.20	138.27	303.86	131.64	111.89395	8591087	852423	855008.85	0.49	1.35	3.01	6.21	
684		2000	40	13.9	138	13.0	3.69	4.25	4.49	0.36	0.24	0.60	40.23	138.22	287.72	139.02	118.17372	720993	7192154	714321.72	0.47	1.23	2.67	5.36	
685		2100	40	15.7	138	10.9	4.02	4.48	4.74	0.46	0.26	0.72	40.26	138.17	368.43	108.57	92.28493	4291518	423800	423875.42	0.61	1.88	4.71	11.00	
686		2200	40	17.1	138	6.9	4.13	4.51	4.78	0.38	0.27	0.65	40.30	138.12	303.86	131.64	111.89395	8591087	852423	855008.85	0.49	1.35	3.01	6.21	
687		2300	40	19.6	138	0.5	4.23	4.66	4.90	0.43	0.24	0.67	40.33	138.01	344.21	116.21	98.78456	2991345	295221	2007181.20	0.57	1.67	3.99	8.90	
688		2400	40	21.4	138	0.5	4.30	4.72	4.90	0.42	0.18	0.60	40.36	138.01	336.14	190.00	101.54444	1401290	143046	146688.14	0.55	1.60	3.78	8.29	
689		2500	40	23.2	137	57.3	4.26	4.59	4.80	0.53	0.21	0.54	40.39	137.96	263.51	131.80	129.03337	510864	5101796	513447.51	0.42	1.07	2.23	4.28	
690	KT-88-9 @110	2600	40	27.5	137	58.7	4.37	4.74	4.95	0.37	0.21	0.58	40.46	137.98	295.79	135.23	114.95384	7901039	792285	794653.79	0.48	1.29	2.84	5.77	
691		2700	40	26.0	138	1.9	4.40	4.81	5.10	0.41	0.29	0.70	40.43	138.03	328.07	121.92	103.6432	0701237	072879	076225.06	0.54	1.54	3.57	7.72	
692		2800	40	24.1	138	4.9	4.34	4.75	4.95	0.41	0.20	0.61	40.40	138.08	328.07	121.92	103.6432	0701237	072879	076225.06	0.54	1.54	3.57	7.72	
693		2900	40	22.5	138	7.9	4.29	4.70	4.92	0.41	0.22	0.63	40.38	138.13	328.07	121.92	103.6432	0701237	072879	076225.06	0.54	1.54	3.57	7.72	
694		3000	40	20.9	138	10.9	4.13	4.52	4.80	0.39	0.28	0.67	40.35	138.18	311.93	128.23	109.00407	9291135	922568	925387.93	0.51	1.41	3.19	6.68	
695		3100	40	19.2	138	13.5	4.04	4.43	4.65	0.39	0.22	0.61	40.32	138.23	311.93	128.23	109.00407	9291135	922568	925387.93	0.51	1.41	3.19	6.68	
696		3200	40	17.1	138	16.1	3.86	4.21	4.40	0.35	0.19	0.54	40.31	138.27	279.65	143.04	121.38360	64949	650209	654010.64	0.45	1.18	2.52	4.97	
697		3300	40	16.0	138	19.0	3.62	4.00	4.15	0.38	0.15	0.53	40.27	138.32	303.86	131.64	111.89395	8591087	852423	855008.85	0.49	1.35	3.01	6.21	
698		3400	40	12.2	138	24.5	3.33	3.80	4.02	0.47	0.22	0.69	40.20	138.41	376.50	106.24	90.31	505.5	1579.5	4011.5	9515.5	0.63	1.96	4.97	11.79
699	JAPEX Y85-5-2	3500	40	26.5	138	1.5	4.10	4.50	4.70	0.40	0.20	0.60	40.44	138.03	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.18
700		3600	40	27.5	138	4.5	4.15	4.59	4.77	0.41	0.18	0.60	40.46	138.08	352.29	113.54	96.51468	2901401	2934405	297710.29	0.58	1.74	4.22	9.56	
701		3700	40	28.5	138	8.0	4.16	4.57	4.78	0.41	0.21	0.62	40.48	138.13	328.07	121.92	103.6432	0701237	072879	076225.06	0.54	1.54	3.57	7.72	
702		3800	40	29.5	138	11.0	4.10	4.51	4.75	0.41	0.24	0.65	40.49	138.18	328.07	121.92	103.6432	0701237	072879	076225.06	0.54	1.54	3.57	7.72	
703		3900	40	20.5	138	14.0	4.09	4.40	4.50	0.31	0.10	0.41	40.34	138.23	247.37	161.70	137.45315	369783	3691584	362955.37	0.39	0.97	1.97	3.67	
704		4000	40	21.5	138	17.5	4.13	4.58	4.78	0.45	0.20	0.65	40.36	138.29	360.36	111.00	94.35480	3591459	353598	3538273.36	0.60	1.81	4.46	10.25	
705	JAPEX Y85-5-2	4100	40	21.5	138	17.5	4.13	4.58	4.78	0.45	0.20	0.65	40.36	138.29	360.36	111.00	94.35480	3591459	353598	3538273.36	0.60	1.81	4.46	10.25	
706		4200	40	15.0	135	34.5	3.95	4.20	4.93	0.25	0.73	0.98	38.25	135.58	198.95	201.06	170.90248	049567	0501060	0491818.94	0.31	0.71	1.32	2.26	
707		4300	40	16.0	135	33.0	3.97	4.24	5.04	0.27	0.80	1.07	38.21	135.55	215.09	185.97	158.08270	089636	0891219	082148.09	0.34	0.79	1.51	2.96	
708		4400	40	18.0	135	30.0	3.99	4.30	5.19	0.31	0.89	1.20	38.32	135.50	247.37	161.70	137.45315	369783	3691584	362955.37	0.39	0.97	1.97	3.67	
709		4500	40	20.5	135	28.0	3.99	4.35	5.30	0.36	0.95	1.31	38.34	135.47	287.72	139.02	118.17372	720993	7192154	714321.72	0.47	1.23	2.67	5.36	
710		4600	40	21.5	135	28.0	3.99	4.35	5.30	0.36	0.95	1.31	38.34	135.47	287.72	139.02	118.17372	720993	7192154	714321.72	0.47	1.23	2.67	5.36	
711	JAPEX Y85-5-2	4700	40	21.5	135	28.0	3.99	4.35	5.30	0.36	0.95	1.31	38.34	135.47	287.72	139.02	118.1								

JAPEX Y85-5	0	38	150	135	34.0	3.06	4.19	5.00	0.23	0.81	1.04	38.25	135.57	182.81	218.81	185	99276.26	809.504	8.069197	8091531	81	0.28	0.63	1.14	1.90
1800	38	22.5	135	26.0	4.00	4.40	5.39	0.40	0.99	1.39	38.38	135.43	320.00	125.00	106.25	420	1186	2720	5793	0.52	1.47	3.37	7.11	11.91	
716	1800	38	25.0	135	24.5	4.01	4.42	5.37	0.41	0.95	38.32	135.40	336.14	119.01	103.5444	4401290	143046	146688	14	0.51	1.60	3.78	8.29	13.78	
717	2000	38	27.0	135	21.5	4.01	4.42	5.37	0.41	0.95	38.36	135.43	336.14	121.92	103.64432	4401290	143046	146688	14	0.54	1.60	3.78	8.29	13.78	
718	2000	38	27.0	135	21.5	4.01	4.42	5.37	0.41	0.95	38.36	135.43	336.14	121.92	103.64432	4401290	143046	146688	14	0.54	1.60	3.78	8.29	13.78	
719	2400	38	29.0	135	19.5	4.01	4.44	5.47	0.46	1.00	38.46	135.48	358.43	118.57	96.451468	4291518	4293400	428875	29	0.61	1.88	4.71	11.00	18.44	
720	2400	38	31.0	135	17.0	4.00	4.44	5.47	0.44	0.86	38.30	135.32	358.43	118.57	96.451468	4291518	4293400	428875	29	0.58	1.74	4.22	9.56	15.68	
721	3600	38	41.5	135	6.0	4.01	4.59	5.40	0.48	0.81	38.29	135.39	369.135	107	88.41517	2701642	2714323	2651002	5	0.64	2.04	5.25	12.65	25.00	
722	3600	38	41.5	135	6.0	4.01	4.59	5.40	0.48	0.81	38.29	135.39	369.135	107	88.41517	2701642	2714323	2651002	5	0.64	2.04	5.25	12.65	25.00	
723	4000	38	47.5	135	1.5	4.02	4.53	5.26	0.51	0.73	38.14	135.36	358.43	118.57	85.07	73.0847	7307378	7271130	27200170	0.69	2.37	6.49	16.68	31.91	
724	4000	38	47.5	135	1.5	4.02	4.53	5.26	0.51	0.73	38.14	135.36	358.43	118.57	85.07	73.0847	7307378	7271130	27200170	0.69	2.37	6.49	16.68	31.91	
725	4400	38	52.0	134	55.0	4.01	4.40	5.04	0.39	0.64	38.03	134.95	311.93	125.00	106.25	420	1186	2720	5793	0.51	1.41	3.19	6.68	11.91	
726	4600	38	52.0	134	55.0	4.01	4.40	5.04	0.39	0.64	38.03	134.95	311.93	125.00	106.25	420	1186	2720	5793	0.51	1.41	3.19	6.68	11.91	
727	5000	38	56.0	134	50.5	3.25	3.67	3.91	0.32	0.24	38.66	138.93	134.84	336.14	119.01	103.5444	4401290	143046	146688	14	0.55	1.60	3.78	8.29	
728	5000	38	56.0	134	50.5	3.25	3.67	3.91	0.32	0.24	38.66	138.93	134.84	336.14	119.01	103.5444	4401290	143046	146688	14	0.55	1.60	3.78	8.29	
729	5000	39	0.0	134	46.0	1.34	2.21	2.30	0.28	0.29	38.97	134.80	311.93	128.23	169.00407	9291115	925658	925387	93	0.51	1.41	3.19	6.68		
730	5000	39	0.0	134	46.0	1.34	2.21	2.30	0.28	0.29	38.97	134.80	311.93	128.23	169.00407	9291115	925658	925387	93	0.51	1.41	3.19	6.68		
731	7000	39	23.5	134	22.5	2.62	3.12	3.40	0.20	0.28	39.06	134.36	400.78	79.85	52.36281	1160671	1160130	1167330	15	0.35	0.84	1.62	2.89	4.52	
732	7000	39	23.5	134	22.5	2.62	3.12	3.40	0.20	0.28	39.06	134.36	400.78	79.85	52.36281	1160671	1160130	1167330	15	0.35	0.84	1.62	2.89	4.52	
733	7000	39	23.5	134	22.5	2.62	3.12	3.40	0.20	0.28	39.06	134.36	400.78	79.85	52.36281	1160671	1160130	1167330	15	0.35	0.84	1.62	2.89	4.52	
734	7000	39	26.0	134	18.5	2.60	3.35	3.70	0.25	0.35	39.00	134.34	432.99	92.38	77.09584	9392136	9685801	9616478	0	0.76	2.65	7.20	19.09		
735	8100	39	28.0	134	16.0	2.81	3.35	3.77	0.34	0.42	39.06	134.27	432.99	92.38	77.09584	9392136	9685801	9616478	0	0.76	2.65	7.20	19.09		
736	8400	39	31.0	134	12.0	2.60	3.00	3.22	0.30	0.22	39.22	134.20	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00	
737	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
738	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
739	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
740	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
741	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
742	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
743	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
744	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
745	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
746	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
747	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
748	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
749	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00
750	8500	39	32.0	134	10.5	2.49	2.94	3.26	0.45	0.32	0.77	39.52	134.18	460.36	111.00	94.35480	3591459	3587731	3582736	0	0.68	2.30	5.84	14.52	24.00

Appendix-D

This program estimate the depth of some temperature. This program run on the Apple Macintosh. Following files need to run.



ONDO Estimation v1.0

```
#include<stdio.h>

main()
{
float act, hf,tc, ondo, depth1, depth2;
FILE *fin, *fout, *fopen();
char inf[20], outf[20];
int count;

printf("\n\nPlease enter the file name of A/CT depth_Heatflow
data.\n\t7");
scanf("%s", inf);

printf("\n\nPlease enter the output file name.\n\t7");
scanf("%s", outf);

fin=fopen(inf, "r");
fout=fopen(outf, "w");
count=1;
printf("\n\t");

while(1){
if((fscanf(fin, "%f\t%f", &act, &hf))==EOF) break;
depth1=1;
ondo=40; /* Opal-A/CT transition temperature */

while(1){
depth2=act+depth1;
tc=0.51109+0.0014757*depth2;
ondo=((hf/tc)/1000)+ondo;
if(ondo>=50){
```


[illegible]

ODP Physical Properties

Site 796

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
1.0	1.60	2.54	73.60	47.13	2.79
1.9	1.53	2.58	77.20	51.69	3.39
2.1	1.62	2.57	77.50	49.01	3.44
2.6	1.53	2.55	75.30	50.42	3.05
3.6	1.68	2.80	78.20	47.69	3.58
4.2	1.59	2.70	76.30	49.16	3.21
5.7	1.64	2.59	83.80	52.35	5.18
7.2	1.63	2.64	71.60	45.00	2.52
8.7	1.58	2.68	77.70	50.38	3.48
10.2	1.57	2.65	75.60	49.33	3.09
11.7	1.70	2.67	65.00	39.17	1.86
13.8	1.59	2.59	71.50	46.07	2.51
15.0	1.64	2.81	71.40	44.60	2.49
16.1	1.66	2.61	67.60	41.72	2.08
23.3	1.57	2.62	74.50	48.61	2.92
24.8	1.80	3.13	70.90	40.35	2.43
26.2	1.65	2.61	69.00	42.84	2.22
27.7	1.59	2.56	75.60	48.71	3.10
29.3	1.62	2.50	70.30	44.46	2.37
30.6	1.52	2.48	77.40	52.17	3.43
31.2	1.59	2.39	77.00	49.61	3.34
32.7	1.68	2.76	75.60	46.10	3.10
32.7	1.61	2.67	75.00	47.73	2.99
34.2	1.61	2.58	78.20	49.76	3.59
34.2	1.50	2.39	79.00	53.96	3.75
35.7	1.50	2.39	79.00	53.96	3.75
36.3	1.76	2.54	68.50	39.87	2.17
40.2	1.76	2.58	65.40	38.07	1.89
40.8	1.59	2.60	75.50	48.65	3.08
41.5	1.59	2.52	73.10	47.10	2.71
42.3	1.60	2.54	73.70	47.19	2.81
42.3	1.55	2.51	76.80	50.76	3.30
43.7	1.71	2.62	69.30	41.52	2.26
43.7	1.46	2.45	80.10	56.21	4.02
45.3	1.72	2.60	67.50	40.21	2.08
45.3	1.58	2.67	76.20	49.41	3.20
46.7	1.61	2.81	76.00	48.36	3.17
48.5	1.60	2.63	75.70	48.47	3.12
49.7	1.64	2.54	73.50	45.92	2.77
50.8	1.54	2.48	76.20	50.69	3.20
51.4	1.64	2.51	70.50	44.04	2.40
52.3	1.64	2.77	75.90	47.41	3.14
53.8	1.51	2.39	73.50	49.87	2.77

ODP Physical Properties

Site 796

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
55.3	1.64	2.55	74.60	46.60	2.94
56.2	1.39	2.14	83.40	61.47	5.01
58.2	1.65	2.61	68.90	42.78	2.22
59.7	1.56	2.65	76.50	50.24	3.26
60.5	1.63	2.60	69.70	43.81	2.30
62.5	1.66	2.68	69.20	42.71	2.24
69.4	1.62	2.65	74.20	46.92	2.88
70.1	1.68	2.46	69.50	42.38	2.28
79.3	1.61	2.47	75.10	47.79	3.02
80.8	1.51	2.35	73.50	49.87	2.77
88.5	1.76	2.72	61.70	35.92	1.61
91.9	1.62	2.51	75.30	47.62	3.05
93.6	1.47	2.50	76.50	53.32	3.25
94.4	1.62	2.39	73.80	46.67	2.82
108.6	1.60	2.58	70.30	45.01	2.36
109.7	1.56	2.57	72.80	47.81	2.67
111.6	1.73	2.55	60.20	35.65	1.51
113.2	1.71	2.58	64.20	38.46	1.79
114.1	1.86	2.51	53.00	29.19	1.13
118.2	1.60	2.60	69.70	44.63	2.30
119.7	1.58	2.57	71.90	46.62	2.56
121.2	1.58	2.61	70.60	45.78	2.40
122.3	1.59	2.53	70.50	45.43	2.39
127.9	1.54	2.49	71.40	47.50	2.50
129.4	1.63	2.51	65.20	40.98	1.88
137.5	1.64	2.51	68.80	42.98	2.20
139.0	1.90	2.62	49.20	26.53	0.97
140.6	1.57	2.51	71.00	46.33	2.44
142.0	1.50	1.84	75.40	51.50	3.06
147.2	1.59	2.35	70.50	45.43	2.39
148.7	1.77	2.52	70.30	40.69	2.36
150.2	1.56	2.46	72.90	47.88	2.68
151.7	1.58	2.36	71.20	46.17	2.47
153.2	1.58	2.37	69.50	45.07	2.28
154.7	1.60	2.44	68.20	43.67	2.15
156.8	1.50	2.31	72.60	49.59	2.65
158.3	1.52	2.30	69.30	46.71	2.26
159.8	1.60	2.26	69.70	44.63	2.30
161.3	1.62	2.43	66.80	42.24	2.01
166.3	1.46	2.23	75.90	53.26	3.15
167.3	1.45	2.21	75.50	53.34	3.08
176.0	1.53	2.65	23.30	15.60	0.30
177.5	1.52	2.44	73.50	49.54	2.78

ODP Physical Properties

Site 796

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
179.0	1.52	2.44	73.50	49.54	2.78
180.5	1.63	2.36	61.50	38.65	1.60
182.0	1.53	2.33	69.10	46.27	2.23
183.0	1.54	2.38	70.40	46.83	2.38
185.7	1.57	2.51	72.40	47.24	2.62
187.2	1.85	2.54	52.70	29.18	1.11
188.7	1.55	2.36	70.30	46.47	2.37
190.2	1.53	2.55	77.00	51.56	3.36
191.4	1.67	2.48	65.10	39.94	1.86
195.4	1.66	2.45	67.10	41.41	2.04
196.9	1.70	2.71	73.50	44.29	2.77
198.4	1.66	2.45	68.30	42.15	2.15
199.9	1.65	2.47	69.60	43.22	2.29
201.7	1.49	2.39	77.90	53.56	3.52
202.9	1.66	2.32	63.90	39.44	1.77
205.1	1.79	2.55	58.50	33.48	1.41
206.0	1.85	2.45	59.50	32.95	1.47
214.8	1.51	2.33	73.70	50.00	2.80
224.8	1.79	2.51	60.30	34.51	1.52
225.9	1.84	2.41	58.10	32.35	1.39
233.6	1.88	2.56	57.30	31.23	1.34
243.5	1.79	2.57	61.90	35.43	1.62
253.0	2.59	2.73	20.30	8.03	0.25
255.1	1.94	2.47	49.80	26.30	0.99
262.9	2.00	2.57	50.00	25.61	1.00
265.7	1.86	2.44	52.10	28.70	1.09
266.4	2.05	2.68	47.20	23.59	0.89
282.5	1.90	2.52	51.60	27.82	1.07
283.3	1.94	2.50	49.40	26.09	0.98
292.4	1.91	2.57	55.00	29.50	1.22
293.6	1.92	2.43	50.10	26.73	1.00
294.6	1.99	2.41	50.70	26.10	1.03
301.1	2.07	2.90	66.30	32.81	1.97
312.1	2.10	2.60	48.50	23.66	0.94
321.1	2.11	2.48	39.50	19.18	0.65
322.1	2.06	2.45	48.90	24.32	0.96
323.8	2.02	2.35	39.80	20.19	0.66
324.3	1.91	2.39	48.80	26.18	0.95
325.1	1.98	2.52	53.50	27.68	1.15
326.7	2.10	2.47	47.30	23.08	0.90
330.4	2.66	2.68	12.70	4.89	0.14
332.0	2.16	2.66	45.20	21.44	0.83
340.9	1.94	2.58	50.20	26.51	1.01

ODP Physical Properties

Site 796

Depth	Bulk Density	Grain Density	Porosity	Water Contents	Void Ratio
349.0	2.10	2.58	43.80	21.37	0.78
359.7	2.06	2.73	50.30	25.02	1.01
368.2	2.55	2.79	20.00	8.04	0.25
378.0	2.12	2.75	44.40	21.46	0.80
388.7	2.10	2.64	44.80	21.86	0.81
397.9	2.73	2.63	18.70	7.02	0.23
398.5	2.04	2.71	38.80	19.49	0.64
399.0	1.93	2.57	53.90	28.61	1.17
407.4	2.12	2.63	43.80	21.17	0.78
416.7	2.66	2.73	14.80	5.70	0.17
428.3	1.94	2.61	57.80	30.52	1.37
432.1	2.23	2.67	39.10	17.96	0.64
433.2	2.20	2.75	43.60	20.30	0.77
434.3	2.13	2.61	42.60	20.49	0.74
437.2	2.14	2.69	39.10	18.72	0.64
437.7	2.26	2.64	42.10	19.08	0.73
446.5	2.19	2.70	39.00	18.24	0.64
447.7	2.30	2.80	39.80	17.73	0.66
449.3	2.28	2.84	41.80	18.78	0.72
450.3	2.26	2.87	45.30	20.54	0.83
451.8	2.24	2.79	41.90	19.16	0.72
452.5	2.28	2.84	35.20	15.82	0.54
455.7	2.24	2.69	35.50	16.24	0.55
457.6	2.55	2.84	29.60	11.89	0.42
459.4	2.31	2.66	39.30	17.43	0.65

