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**TELEPHONE TARIFF REBALANCING
REPORT FOR:**

**TELCOR
(Instituto Nicaraguense de
Telecomunicaciones y Correos)**

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I. INTRODUCTION

OBJECTIVES

Price Waterhouse (PW) was commissioned to perform consultancy services for tariff restructuring, valuation and privatization at the Instituto Nicaraguense de Telecomunicaciones y Correos (TELCOR). This report is one of several. It focusses on the need for tariff rebalancing at TELCOR.

PURPOSE

The purpose of this report is to present our findings and conclusions on the rebalanced tariff level for discussion with TELCOR management. We would like to stress that the validity of the results and conclusions presented in this report are dependent on the quality of the underlying data and reasonableness of the assumptions made. Confirmation and approval of the data used and the assumptions applied must be obtained before implementing the proposed rebalanced tariff herein.

APPROACH

Our approach focussed on the analysis of data made available to us at TELCOR, as well as from outside sources. Because tariff setting is a multi-departmental activity, discussions were held with various members of staff at TELCOR involved in tariff setting issues.

TECHNICAL ASSISTANCE PERFORMED

This report encompasses a review of TELCOR's current tariff, including pricing and structure. It then focusses on other country telecommunications entity's tariffs and structure as a means of comparison. The report uses this information as background for the development of a rebalanced tariff design for TELCOR. The development of this new tariff include a discussion of issues dealing with the timing of its implementation, its relationship to the privatization process, and its ability to meet the current revenue requirements of the system. The marginal cost approach will be discussed in detail, as will the each particular component of the proposed, rebalanced tariff structure.

II. CURRENT TARIFF REVIEW

A. TELCOR'S OBJECTIVES AND APPROACH TO TARIFF SETTING

This section of the report reviews the current tariff in detail, including the structure and rates currently in force for telecommunications services. The provision of the multitude of telecommunications services are paid for through the tariff structure imposed by TELCOR. When tariff rates are set and/or changed, they must then be approved by the Government of Nicaragua before they can be officially implemented.

Tariffed telecommunications services provided by TELCOR include:

- Telephone (inland and international)
- Telex (inland and international)
- Telegraph (inland and international)
- Other specialized services such as facsimile, type approval service and transmitting/receiving facilities
- National and international leased circuits (telegraph and voice grade)

For the purposes of this report, however, the main focus will be the tariff charged for the provision of telephone services. General comments concerning the provision of telex and facsimile services will be included in the recommendations section of this report.

The telephone tariff consists of:

- A subscriber connection fee which is dependent on the distance from the nearest exchange and the type of exchange (manual or automatic)
- A monthly rental charge according to the type of line

- A usage charge for inland calls depending on the distance, duration and time of the call
- An international calling charge based on the duration, time and destination of the call

B. CURRENT TARIFF STRUCTURE

Currently, the tariff structure is set up in a manner which charges very high rates for international calls, and very low rates for calls within the country. In this instance, the international call revenue is said to be cross-subsidizing the local, departmental and national long distance telephone services. Although the total net revenue produced from this tariff structure results in a slightly positive cash flow, this tariff structure is not optimal for the long-run requirements of the system, nor is it optimal for an organization which is to be run as a commercial entity. Methods for restructuring this tariff will be discussed later in this report in the Rebalanced Tariff Section.

In **Exhibit One**, and throughout this report, one rate each is shown for local, departmental and national long distance charges; and four for international outgoing calls, a full rate (HP) and a reduced rate (HR) each for person to person calls, and station-to-station calls. An additional category also exists, the super reduced rate, but its very small amount of traffic (approximately 1.5% of total outgoing international traffic) did not warrant its inclusion in this analysis. It will, however, continue to be included as a part of the rebalanced tariff, as shown in **Exhibit Twelve**.

Charges for calls within the country are based on the number of pulses that elapse during the course of the phone call. The domestic charge per pulse is C\$0.033, regardless of where in the country the call is going to or coming from. The number of pulses per minute charged, however, is different depending on the origination and destination points of the particular call. For local calls, the rate is one pulse per minute, which translates to a charge of C\$0.033 per minute. For departmental calls, however, the rate is 6 pulses per minute, or a charge of C\$0.198 per minute. For national long distance calls, the rate is 12 pulses per minute for a charge of C\$0.396 per minute. The charges for all of these domestic calls, especially the local calls, are very low in comparison to the marginal cost of providing one minute of service of their service. These marginal costs will be calculated in detail in a later report, but have been estimated at this time to be approximately C\$0.13 for one minute of local calling, C\$0.13 for one minute of departmental calling, and C\$0.136 for one minute of national long distance calling. This marginal cost concept will also be further developed in the Rebalanced Tariff Section.

The current tariffs charged for outgoing international calls, on the other hand, are much higher than their respective marginal costs. In addition, these tariffs are also much higher than the rate charged by many other countries for the same length of call to Nicaragua. For example, the

station-to-station charges of C\$17.25 per minute during the full rate hours, and C\$14.38 during reduced rate hours for a call from Nicaragua to the U.S. are approximately four times the average charge for the same length of call from the U.S. to Nicaragua.

The current settlement charge of U.S.\$0.75 is paid to the country which receives the call by the country making the call. And although TELCOR receives more net income for an outgoing international call per minute (C\$17.25 minus U.S.\$0.75, which equals approximately net U.S.\$2.08) than for an incoming call (U.S.\$0.75), there exists a great deal of exchange rate risk with outgoing calls. To explain, with the settlement charge being paid in U.S.\$ and the outgoing call charge being collected in Cordobas, a devaluing Cordoba will squeeze this existing profit margin, unless rates are adjusted upwards to compensate. Currently, however, the ratio of incoming calls to outgoing calls between the U.S. and Nicaragua is approximately five to one. This imbalance has resulted in a net revenue gain for Nicaragua of U.S.\$17.2 million for calendar year 1992 (or C\$104.9 million; see **Exhibit Eight** for net revenue from international settlement charges). This analysis specifically with the U.S. is most important for Nicaragua because it is the U.S. which currently accounts for a vast majority of Nicaragua's international traffic (the U.S. as an originating point accounts for 90.76% of incoming minutes to Nicaragua, excluding "sender keep all" Central America. The U.S. as a destination accounts for 66.99% of outgoing international minutes from Nicaragua, excluding Central America). While this result is certainly beneficial to Nicaragua in terms of foreign exchange, it is not sustainable if the tariff is not restructured because of future competition, as well as Nicaragua's vulnerability to pressure from foreign entities to lower the settlement charge. These concepts will also be more fully developed in the Rebalanced Tariff Section.

III. COMPARISONS WITH OTHER ADMINISTRATIONS

The tariffs which other similar administrations currently charge for telephone services can be used as a means of comparison with TELCOR's current and future tariff rates. The list of other administrations used in this analysis were determined by their relative similarity to TELCOR in terms of either number of lines in service, or penetration levels; as well as the availability of relevant statistical data. Because TELCOR presently has approximately 62,000 lines in service (50,000 in 1991, which was the most recent date for data from other countries), and a penetration rate of approximately 1.7%, other systems with between 50,000 to 500,000 lines in service were analyzed for this section. In addition, larger systems with penetration rates below twenty percent were also considered.

Due to the poor level of data collection for many of the administrations that fell under this description, many administrations were not included. For the nine countries which were included, one major assumption was made in order to arrive at the stated estimated tariff levels found in **Exhibit Nine**. As a result, when actual tariff rate information was not obtainable, the procedure used for estimating the relevant tariff levels for the nine administrations in this analysis was as follows: the revenue per line figure¹ was multiplied by the number of lines² in service in order to arrive at a total telephone service revenue figure. This total revenue figure was multiplied by 72%, 9% and 19% to arrive at the total estimated revenue figures for international outgoing, national and local services, respectively. This percentage breakdown is the major assumption upon which this analysis relies. It was computed by taking the approximate breakdown of total revenue after TELCOR tariff rebalancing, found in **Exhibit Five A**. The total revenue per service figures were then divided by the number of billable minutes per respective service³ in order to arrive at the estimated tariff charged per minute for each service. The results of this analysis are dependent not only on the data used, but also on the major assumption stated above. Any change to these assumptions will change the results.

As **Exhibit Nine** shows, the average estimated tariffs per minute from these nine administrations, plus Nicaragua, are as follows: U.S.\$1.961 for international, U.S.\$0.054 for national long distance/departmental, and U.S.\$0.024 for local. While these figures do compare to where the rebalanced tariff for TELCOR is headed, they should not be used as the "correct" tariff level per service. Factors such as income/capita, level of telephone system efficiency/development, and others specific to each administration also influence the tariff. The general tightness of the estimated tariff results, however, implies a general range in which tariff levels have been set in similar administrations.

¹"Yearbook of Common Carrier Statistics," International Telecommunications Union, 20th Edition, 1993.

²Ibid.

³Ibid.

IV. REBALANCED TARIFF

A. APPROACH

The new tariff will generate same amount of revenue as does the current tariff, but from a different mix of tariff component charges. This initial rebalancing is proposed to be implemented within one year, as opposed to over a number of years, so as to align the tariff more closely with the marginal costs of providing telecommunications services, as well as to preserve the current revenue base.

The rebalancing should be done before privatization, so as to give the potential buyer confidence that TELCOR has an efficient pricing scheme that has been approved by the Government of Nicaragua, as well as by the Nicaraguan customers of telecommunications services. If the new tariff has a different effect on traffic than that which is assumed in this model, the buyer can then apply to the regulatory entity for a slight adjustment to the tariffs, having already had the main tariff adjustment proposed in this report already implemented before the privatization. This will reduce the risk to the investor, thus increasing the value of the TELCOR entity to be privatized.

The reason why a major goal of the rebalancing is to preserve the current revenue base is because the current revenue base does meet the revenue requirements of the current system as evidenced by **Exhibit Three**, the Financial Statement Summary. As shown, the revenue produced by the current tariff covers the operating, financing and investing requirements, and is still able to generate a slightly positive cash flow, in the amount of C\$2.2 million. As a result, it is recommended that the rebalanced tariff also be structured so as to be able to provide enough total revenue to achieve this result. As will be shown later in this report, the rebalanced tariff structure results in the same revenue figure as does the current one, but with a more efficient and equitable structure per service offered.

As traffic levels, inflation, exchange rates and other factors change over the life of the operating concession, adjustments to the tariff will be automatically made so as to allow the operator to continue to fund the operating, investing and financing requirements of the system. This indexation formula which adjusts the tariff will be negotiated with the new operating company as the privatization draws closer. The general structure of this adjustment formula can be found in **Appendix B**.

The exact form and size of the required return on investment to the strategic investors will be determined later as the privatization draws closer. The revenue produced by the tariff must also cover this future return. As is the nature of an investment in a telecommunications monopoly in a developing country, a large portion of the return on investment could likely take the form of capital appreciation. As will be shown in the valuation report to be produced at a later date,

the combination of this proposed rebalanced tariff structure and the future expansion of telecommunications service is projected to result in continued growth of the capital base and equity value.

B. STRUCTURAL CHANGES

Until recently, there has not been much in the form of competition for telecommunications services in Nicaragua. As a result, high rates for international calls could be charged, and the excess revenue earned from this service could be used subsidize domestic telecommunications services. This environment, however, is changing rapidly as evidenced by the dropping trend in traffic, and resultant revenue, statistics from the popular Nicaragua-U.S. route. With the advent of competition for this route in the form of *USA Direct*, as well as *call-back* services, such as *Rebound*, a choice for TELCOR has emerged. This tradeoff consists of choosing between a) trying to increase \$U.S. settlement receipts, and thus allowing the competing services to take over more of the outgoing international call volume; and b) increasing \$C outgoing call revenue, less the \$U.S. settlement, by competing against these services through lowering the international outgoing tariff. This situation was analyzed, taking into consideration that TELCOR already receives more \$U.S. revenue than is the sum of its total \$U.S. costs. The result is a recommendation that the international outgoing rates be lowered so as to keep any more customers from switching from TELCOR to USA Direct or a call back-service, or from potential new customers from joining the competition instead of TELCOR.

As a result, the initial step in our tariff rebalancing process was to analyze the international calling market, and then to lower the related international tariffs so as to prevent the continuing loss of existing customers, as well as potential new customers, to newly available competitive services. After this step was accomplished, all of the domestic service tariffs were analyzed. The general framework used for the domestic tariff rebalancing was the marginal cost approach, with large downward adjustments made for the ability of the customer to pay, as well as the potential political problems created by unprecedented and large increases in the tariff structure. The rates charged for basic connection and installation fees were also analyzed, as well as the monthly fixed charges, with resulting recommendations shown in **Exhibit Twelve**. In addition, charges for non-telephone, telecommunications services were analyzed, albeit briefly in Section Five of this report, since they only represent approximately 1.3% of TELCOR's revenues.

1. INTERNATIONAL RATES, OUTGOING CHARGES

In response to the advent of international competition, the rebalanced rates for outgoing international calls from Nicaragua has been set at a rate just below that of USA Direct. The country of the United States was used as the proxy for analyzing international, outgoing charges

from Nicaragua because of the fact that a very large share of outgoing international calls terminate in the U.S. (66.99% of the outgoing minutes billed from Nicaragua to the rest of the world, excluding Central America, go to the U.S.). In addition, the rates charged by the USA Direct service specifically, were used as a proxy for an upper bound for the rebalancing of the new rate for outbound international calls from Nicaragua to the U.S. so as not to lose any more net outgoing revenue than has already been lost because of this service. Rates given by the call-back service *Rebound* were not used in this analysis because there was not enough detail provided on the components of their pricing structure. In addition, the savings comparisons shown by *Rebound* did not accurately portray the current TELCOR rates. As a result, their numbers were not relied upon in this analysis.

In **Exhibit Four**, the international rebalanced tariff is calculated. Using the cost breakdown for the average five minute international call, it is shown that by using USA Direct, this call would cost U.S.\$9.52 if it were a station-to-station call, or U.S.\$13.02 if it were person-to-person.

TELCOR's rebalanced international station-to-station tariff was calculated to produce a total cost for the same five minute call just under the USA Direct charge of U.S.\$9.52, at U.S.\$9.40 using a C\$6.1/U.S.\$ exchange rate. The rebalanced average charge per minute to create this total cost would be U.S.\$1.88. This U.S.\$1.88 is derived from the full rate/reduced rate actual traffic ratio for station-to-station calls of 69%/31%, which results in a rebalanced tariff of U.S.\$1.98 for full rate, and \$1.66 for reduced rate per minute. These new rates are compared to the existing tariff rates of U.S.\$2.83/U.S.\$2.36 for full/reduced rates. In Cordobas, the rate structure is now C\$12.08/C\$10.11 compared to the old structure of C\$17.25/C\$14.38 per minute of calling to the U.S., as shown in the shaded portion of **Exhibit Five**.

TELCOR's rebalanced international person-to-person tariff was calculated to produce a total cost for the same five minute call just under the USA Direct charge of U.S.\$13.02, at U.S.\$12.90 using a C\$6.1/U.S.\$ exchange rate. The rebalanced average charge per minute to create this total cost would be U.S.\$2.58. This U.S.\$2.58 is derived from the full rate/reduced rate actual traffic ratio for person-to-person calls of 60.3%/39.7%, which results in a rebalanced tariff of U.S.\$2.75 for full rate, and \$2.32 for reduced rate per minute. These new rates are compared to the existing tariff rates of U.S.\$3.77/U.S.\$2.83 for full/reduced rates. In Cordobas, the rate structure is now C\$16.78/C\$14.163 compared to the old structure of C\$23/C\$17.25 per minute of calling to the U.S., as shown in the shaded portion of **Exhibit Five**.

As mentioned earlier, the relatively small quantity of traffic in the super reduced category did not warrant its inclusion in this analysis. However, the rebalancing of this category is related to the rebalancing of the other two reduced rate categories of station-to-station and person-to-person. In the former, the tariff was reduced 29.7% from C\$14.38 to C\$10.11. In the latter, the reduction was of the order of 17.9%, from C\$17.25 to C\$14.163. As a result, in our analysis the super reduced category was lowered by the 17.9% figure, since even this smaller of the two reductions will cause the rebalanced super reduced category to approach the lower bound for one minute of international outgoing calls, as discussed in the next paragraph. The

adjustment to this category will change the super reduced tariff from its current level of C\$11.5 for person-to-person to C\$9.44. Also, it will change the super reduced rate for station-to-station from C\$8.63 per minute to C\$7.08.

The lower price bound for the rebalancing of the international outbound tariff for calls from Nicaragua to the U.S. was set at the marginal cost of providing one unit of international service, plus the international settlement charge owed for that call. The marginal cost is calculated to equal approximately U.S.\$0.35, or C\$2.14, a number which will be refined in later deliverables for the privatization project. The settlement charge is U.S.\$0.75 or C\$4.575. The sum of these costs is approximately C\$6.715 or U.S.\$1.10. This shows that the rebalanced price for super reduced, station-to-station calls of C\$7.08 or U.S.\$1.16 is very close to the absolute minimum. The upper bound constraint of the USA Direct service charge, and the lower bound constraint of the marginal cost plus settlement charge now restrict the general rule that a number of different tariff scenarios can satisfy the revenue sufficiency, efficiency and equity objectives. For a detailed description of these objectives, see **Appendix A**.

With the respective rebalancing of each component of the international tariff, the issue of elasticity of demand was factored into the analysis. The basic assumption used was that within certain ranges of price changes, the rebalanced tariff applied to international calling services would enjoy a relatively elastic demand because of the advent of competitive service. The assumptions used for elasticity of demand, and resultant changes in traffic levels due to price changes can be found at the bottom of Exhibit Five. An elasticity factor of -.1 was used for calls to the U.S., and -.05 for calls to the rest of the world. The price change ranges for which these elasticities still held true were assumed to be up to a 50% reduction in price. The elasticity factor for the U.S. is assumed to be more sensitive to price reductions because of its popularity as a call destination. The elasticity figures and relevant ranges used are approximations, since no available data could be found to make exact calculations.

2. INTERNATIONAL RATES, SETTLEMENT RATE

The other part of the international call tariff briefly mentioned above is the settlement rate. Calls originating from the U.S. were used as a proxy for all incoming international calls because of the fact that 83.09% of Calendar Year 1992's international settlement revenue from incoming international calls came from the U.S., (see **Exhibits Six and Eight**). So, it is the U.S., and ATT in particular, who want to lower the settlement rate because of the international traffic imbalance and resultant imbalance in settlement rate U.S.\$ payments to Nicaragua from the U.S.. TELCOR has responded to ATT's pressure to lower settlement charges by refusing to do so.

Because of the way the USA Direct competition works, however, with an outgoing call from Nicaragua that uses the USA Direct service being charged as a call which originated in the U.S.,

the settlement income to Nicaragua will increase with every call that USA Direct services from Nicaragua. The net outgoing international call revenue in C\$, which is much greater than the U.S.\$ settlement figure, will decrease. On a net basis, a gain in U.S.\$0.75 is traded for a loss of the net revenue of an outgoing call, which is currently approximately U.S.\$2.08. Because of USA Direct's currently attractive rates for calling the U.S., the latest available monthly data as of December, 1991⁴, show that approximately 51.8% of incoming settlement revenue to TELCOR is the result of the USA Direct service. For the period from April, 1991, (when USA Direct was first introduced in Nicaragua) to December, 1991, this service has grown from accounting for approximately 15.7% of incoming settlement revenue, up to the 51.8% figure. Although total outgoing traffic increased during this period, the amount of outgoing traffic to the U.S. using TELCOR's service actually decreased. This is equivalent to saying that the USA Direct service was used for all of the increase in outgoing traffic to the U.S., and in fact even took some of the existing TELCOR traffic.

This situation has also occurred with other countries that offer the USA Direct service. The following list shows the percentage of U.S. outpayment (or incoming settlement revenue to the developing country) as a percentage of total developing country incoming settlement revenue:⁵

- Anguilla: 22.7%
- Antigua: 26.9%
- Bahrain: 93.0%
- Cayman: 87.1%
- Hong Kong: 21.6%
- Jamaica: 23.6%
- Tortola: 67.1%
- Turks: 32.8%
- U.K. (BT): 25.0%

The rates charged by international competitors must be constantly monitored by TELCOR, and analyzed to see to what extent revenue is being lost. If this occurs, an analysis must be done to see whether lowering Nicaragua's international tariff further, or agreeing to lower the settlement rate would cause the least reduction to net international call revenue. A basic sensitivity analysis of this type can be found in **Exhibit Seven**, which shows the net revenue effect to TELCOR when the settlement rate is changed in conjunction with different actions by ATT. In scenario five at the bottom of **Exhibit Seven**, for example, a reduction in the settlement rate in the manner shown, from U.S.\$1.50 to U.S.\$1.20 over a period of three years,

⁴TELCOR, Anuario Estadístico 1991, Tabla 1.9.

⁵Cable & Wireless, London, 1991.

was recently proposed by ATT, and rejected by TELCOR. This would have cost TELCOR, in terms of lost net settlement revenue, U.S.\$1.055 million in the first year, U.S.\$3.65 million in the second year, and U.S.\$6.613 million in the third year for a total of U.S.\$11.3 million in lost revenue.

3. DOMESTIC RATES

After adjusting the international portion of the telephone tariffs, the charges for domestic services were then assessed. These services include local, departmental and national long distance calls. These domestic services require a different analysis and solution than do the international because of two main reasons. Firstly, the possibility of competitive services does not exist as a motivator to keep the tariff low. Additionally, these services are currently priced far below their respective marginal costs. However, it is not realistic to raise the tariff all the way to the marginal cost of providing these services because of the enormous change in price that would result. To explain, while the charge for one minute of local calling is currently C\$0.033, (U.S.\$0.005), its marginal cost has been calculated to equal approximately U.S.\$0.13, which is approximately 26 times the amount charged for providing this service. (Again, this marginal cost figure is an estimate, and will be refined in later reports for the privatization process). It is not feasible to raise the local tariff by a factor of 26, and not expect either a drop in traffic or a public outcry. However, when the international tariffs are rebalanced, there will no longer be available as much excess revenue to cross-subsidize these domestic services. As a result, the domestic tariffs must be raised to a level which preserves the current revenue base shown at the bottom of **Exhibit One A**.

With the respective marginal cost serving as an upper bound to the rebalancing of the domestic telephone tariffs, not to be realistically approached, the issue of elasticity of demand was factored into the analysis. The basic assumption used was that within certain ranges of price changes, the rebalanced tariff applied to domestic calling services would enjoy a relative inelastic demand because of the lack of substitute (or competitive) services. The assumptions used for elasticity of demand can be found at the bottom of Exhibit Five. An elasticity factor of $-.01$ was used for local call traffic, while factors of $-.005$ and $-.003$ were used for departmental and national long distance traffic, respectively. The price change ranges for which these elasticities still held true, were assumed to be up to a 600% increase for local, and up to a 300% increase for both departmental and national long distance. These elasticity factors became slightly more inelastic as the distance of the domestic call increased (from local to departmental to national long distance) because of the assumption that these longer distance types of calls included more of an element of calls made out of necessity rather than for convenience. Thus, their traffic would be less affected by rising tariffs, within the aforementioned ranges. The elasticity figures and relevant ranges used are approximations, since no available data could be found to make exact calculations.

The total revenue required from the domestic tariffs so as to preserve the current revenue base was met by rebalancing the local, departmental and national long distance tariffs. These tariffs had to be raised sufficiently so as to make up for the lower revenue produced by the newly lowered international outgoing tariffs, as well as the slight loss in line installation revenue as will be described in the next section. The comparison of similar administrations was used as a guideline for this analysis, with marginal costs serving as an upward but unapproachable bound. The rates were rebalanced per minute as follows: local calls from C\$0.033 to C\$0.19; departmental calls from C\$0.198 to C\$0.38, and national long distance from C\$0.396 to C\$0.57. The other structural change in the domestic rates was to simplify the number of pulses charged. With the current tariff, one pulse cost C\$0.033, with local calls being billed at one pulse per minute, departmental at six per minute, and long distance national at twelve per minute. With the rebalanced structure, one pulse is charged at C\$0.19, with local calls being billed at one pulse per minute, departmental at two, and long distance national at three. Because the marginal costs for providing one minute of each of these three domestic services is virtually the same, this new structure approaches a more efficient and sufficient tariff structure.

4. Line Installation Charge

The last component of the tariff rebalancing process was to lower the line installation charge. Currently, the one-time charge is C\$1,000, having recently been lowered from C\$1,375. This fee was determined to be an inhibitor to requesting service by many potential consumers. As a result, the rebalanced tariff suggests lowering the installation charge to C\$300. The reduction in revenue to TELCOR from this price drop is partially covered when elasticity of demand is factored into the analysis. This request for line installation is assumed to carry a highly elastic demand when the price drop is of sufficient magnitude. Because the price drop recommended in the rebalanced tariff is on the order of 70%, with an assumed elasticity of -1.0, the resulting increase in requests for line installation is predicted to jump from 12,000 lines to 20,400 lines per year. The combination of the newly lowered charge and the jump in predicted line installations results in revenue of C\$6.12 million, v.s. the C\$12 million produced from the old installation charge (compare installation line section in Exhibits One A and Five A). Although this is a net loss in revenue, the new installation charge should eventually cause a large increase in demand for telephone service.

V. RESULTS AND RECOMMENDATIONS

RESULTS

After setting the newly rebalanced international tariffs, and adjusting for price elasticity as noted in the bottom of **Exhibit Five**, the local tariffs were rebalanced so as to provide enough revenue to preserve the current revenue base figure of C\$287.26 million (see **Exhibit One A**). The optimal domestic tariff mix resulted in new tariffs of C\$0.19 for local calling minutes (U.S.\$0.031), C\$0.38 for departmental (U.S.\$0.062) and C\$0.57 for national long distance (U.S.\$0.093), as described in the top of **Exhibit Five**. The combination of these newly rebalanced tariffs results in a preservation of the revenue base of C\$287.26 million (compare figure at bottom of **Exhibits One A and Five A**). As mentioned earlier in this report, this preservation is critical to TELCOR's maintenance of their current capital base.

A summary of the current and rebalanced tariff rates can be found in **Exhibit Twelve and Twelve A**.

RECOMMENDATIONS

- It is recommended that TELCOR amend the tariff as shown in the shaded portion of **Exhibit Twelve and Twelve A**. This structure should be implemented as soon as possible, and in any case, before privatization. This reduces perceived risk to potential buyers since sensitivities will have been exposed and resolved.
- In accordance with the accompanying report on regulatory reform, the following regulatory issues related to the new tariff structure are highlighted:
 - TELCOR will regulate the tariffs of the new operating company in a pre-established price-cap based regulatory framework. A concession will be granted to the new company setting out telecommunication infrastructure development targets for the new company.
 - The new company may amend the tariff by application of the price-cap formula, and ratification by TELCOR, the regulator. This will allow the new company flexibility to:

- Meet international traffic account settlements and Intelsat bills.
 - Generate needed network development funds to meet targets
 - Continue a traffic balance in favor of Nicaragua
 - Set affordable tariffs for users
 - Adjust rates to maintain real value under inflationary conditions, but adjusted downwards by an efficiency factor (see **Appendix B** for further explanation)
 - Adjust rates to take into account hard currency variations to ensure continued earnings to fund foreign currency payments and debt service (see **Appendix B** for further explanation)
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- Although non-telephone services were not analyzed in detail for this report, the rebalancing of the telephone tariffs is related to the pricing of other services. It is recommended that tariffs for telex services not be lowered in conjunction with the rebalancing of international telephone call tariff rates. This is because there would likely be no measurable stimulus to the relatively minor telex traffic by adjusting its current tariff. In terms of the facsimile service, the future corporate marketing plan for this service will determine the future of the tariff for this service. Presently, facsimile services are offered at a large discount to the direct dial telephone rates. This is unlike many other similar administrations, who offer facsimile service at or above their direct dial rates, marketing this service as a special value-added service requiring a premium price. If TELCOR were to keep their facsimile rates the same when the telephone tariff is rebalanced, the facsimile service would then be approximately equal to the telephone rates, although still at a slight discount, as shown in **Exhibit Ten**. This issue will be discussed with the appropriate department.

VI. IMPLEMENTATION OF NEW TARIFFS

- In order to best implement this new tariff structure, it is important to note the experience of similar countries. This experience has shown that when local tariffs have been raised by many multiples, even from an extremely low base, there is adverse public reaction. While this reaction translates into negative public relations for the telephone company, there is no significant reduction in the calling rate. In other words, while there exists a tendency to complain as a matter of principle, the financial impact on individual users is minimal, and thus their calling pattern does not change.
- A sudden announcement of such tariff changes, however, will precipitate a greater outcry. Therefore it is important to engage in a carefully planned launch campaign in order to soften up the market. Thus, TELCOR should begin by making public statements about "revenue not covering the costs of expanding local telephone service," and that they are "reviewing the situation to consider whether an increase in domestic rates may be necessary over a period of weeks." This may attract criticism which can then be analyzed and countered by the final announcement of the new tariff structure.
- When the announcement of the new tariff occurs, it is recommended that it be done in the following chronological order: First, it is recommended that TELCOR announce the combination of the domestic tariff increases along with the installation charge reduction. This should temper the reaction to the large increase in domestic rates since many more people will be able to afford to obtain access to the system. Shortly thereafter, the reduction of the international tariff rates should be announced. These reductions can be given as a public relations point to temper the reaction from the domestic tariff increases, but should not be directly linked to local rates. The cross subsidy issue is too complex to air to the public. The initial announcement by TELCOR to reduce international rates need not necessarily reduce the international rate by the entire amount planned. This would allow the possibility of holding some future reduction in reserve in order to appear to make a concession to public opinion. The full reduction should be implemented within a short period of time, however, so as to begin to compete with the competition for international outgoing net revenue.

VII. APPENDIX A: MARGINAL COSTS

When rebalancing TELCOR's tariff, it is not necessary or even realistic to price the tariff exactly at marginal cost. Using the marginal cost approach as a general guideline, however, helps to meet the following three basic goals of tariff setting. While the first of these objectives, that of revenue sufficiency, can also be met by other methods, it is the marginal cost approach which best attempts to meet all of the three:

- **Revenue Sufficiency** whereby the tariff must be sufficient to recover the total costs of its operations
- **Efficiency** whereby the tariff should promote the efficient planning, investment and operation of the system
- **Equity** whereby the tariff should treat customers fairly, such as charging customers equally when they use services with similar costs

In addition to these primary objectives, there are secondary objectives such as simplicity of the tariff, understandability, stability from year to year, and administrative feasibility.

By using the cost-based approach to set the general framework for tariff rebalancing, TELCOR would be able to satisfy the three primary objectives stated above. The goal of revenue sufficiency implies that total revenues from all sources must cover total costs. In principal, one could identify a large number of different tariff scenarios to meet this objective. For instance, the tariff could include no monthly rental for telephones, but intend to recover all costs through usage charges. Alternatively, all costs could be recovered through monthly connection fees with no charges for calling. The revenue sufficiency objective establishes only that the aggregate revenue requirement or "rate level" must be met. It does not provide information on the unit prices that should be charged for each individual service. Cost-based pricing promotes the revenue sufficiency objective since it insures that increased demand is entirely self-financing. As sales increase, the revenues received from the additional services will pay the additional costs of increasing output. If, instead, a system of subsidies is used, increases in consumption of subsidized services necessarily result in losses for the system. The sale of subsidized services is likely to increase since their sale price is lower. Fluctuations in net revenues are to be avoided since cash flow difficulties may result. In general, the financial position of a utility is stronger with cost-based pricing.

The efficiency objective is met by prices that attempt to minimize the wasteful use of a service and of the resources employed in providing the service. This objective is best fulfilled by pricing each service according to the cost of supplying the service. Cost-based pricing forces

the subscriber to pay the cost associated with providing the service, and to demand the quantity associated with that price. Any system of subsidies will encourage subscribers to consume higher than optimal quantities of subsidized services since they do not have to pay full cost. If the system capacity is then expanded to provide this service, total costs and the prices charged to all subscribers will increase.

The equity objective also favors cost-based pricing. If customers with similar consumption are charged different prices, the subscriber charged the higher price will naturally object. Similarly, if two customers pay the same price but one is more expensive to serve, then the less expensive customer is treated unfairly. Such a situation could not persist in a competitive market since a competitor would be likely to offer the less costly customer a lower price and induce him to leave the system. Competition in the national market is unlikely in Nicaragua in the near future, however, so the customer will not likely have the opportunity to leave the system for an alternative service. On the other hand, TELCOR is likely to want to try to lessen customer dissatisfaction. In addition, the provision of service to rural areas, while often more expensive on a per unit cost basis, may need to be priced below or the same as less expensive similar services because of either the level of ability of these consumers to pay, or the somewhat dire need for such services in remote areas.

1. Short-Run v.s. Long-Run Marginal Cost

There are two different ways to calculate marginal cost:

- Long-run marginal cost (LRMC) is defined as the cost of meeting a one unit increase in demand by expanding system facilities
- Short-run marginal cost (SRMC) is defined as the cost of meeting a one unit increase in demand by rationing output. It is equal to the price that must be set to force demand to a level where it is equal to available capacity. If capacity is over utilized so that system facilities are congested, the price must be raised to reduce demand. If there is excess capacity, the SRMC is below price as the price can be reduced to permit demand to increase and utilize the available capacity.

There is a strong relationship between SRMC and LRMC. Given an existing facility, SRMC will increase as demand increases over time. When the SRMC increases to such a level that it exceeds LRMC, which represents the cost of facility expansion, then it is an appropriate time to increase capacity. After capacity has increased, however, there may be some excess capacity

which causes SRMC to decline. As a result, there is normally assumed to be a cycle of SRMC's around a more stable trend of LRMC.

Although SRMC promotes the most efficient use of resources, its use is not recommended to TELCOR in price setting for the following reasons:

- Its instability causes problems since few administrations have sufficient flexibility to adjust prices quickly in response to changes in demand.
- When capacity constraints result from inadequate planning by the utility, it is difficult to justify an increase in tariff to the consumer.
- Following an increase in capacity as a result of expansion, a reduction in tariff may jeopardize the financial health of the utility at a time when it needs revenue to finance the expansion.
- It may be politically unacceptable to increase the tariff at a time when the quality of service offered is deteriorating.

Thus, the primary advantage of long-run marginal cost pricing is that it correctly signals to the customer the cost of the service and simultaneously ensures that system planners expand the system only when it is optimal to do so.

2. Marginal Cost Approach v.s. the Fully Allocated Cost Approach

In addition to the marginal cost approach to defining the costs of supplying service, there also exists the fully distributed cost approach. As discussed, while long-run marginal cost is defined to be the additional cost that results from a one unit increase in the amount of service produced, fully distributed costing is defined to be the process by which all costs incurred in producing a service are allocated to the various services.

As stated, the marginal cost approach has several attractive features:

- It reflects future costs as the system expands.
- It reflects the actual result of subscriber's decisions to increase or decrease the amount

of their consumption.

- It insures that increases in demand produce sufficient revenues to offset the resulting increase in costs since, by definition, cost increases are equal to the marginal cost.

The exact manner in which marginal costs are to be marked up, however, is not an exact science. The method used in this analysis will be explained in the Tariff Rebalancing Section.

In comparison to the above advantages and disadvantages of marginal costing, the principal advantage of fully distributed cost pricing is that the revenue requirement is exactly allocated among services. However, the fully distributed approach has its own drawbacks. All costs including fixed and variable costs are allocated to the services on a basis thought to be causal. This method of allocation may cause controversy, particularly when there are substantial fixed costs. The result can be that prices for some services are set beyond the willingness for some customers to purchase the service. This leads to a loss of sales. As a result, this analysis will use marginal costing as a guideline to rebalancing the tariff, as opposed to the fully allocated cost approach.

APPENDIX B: TARIFF ADJUSTMENT ISSUES

1. RPI-x (Inflation Corrector):

Although this subject area will be negotiated in detail as the date for the sale of TELCOR draws closer, it is necessary to understand how future tariff revisions will have an upper adjustment limitation of the RPI-x formula. The Retail Price Index (RPI) for Nicaragua shows the percentage price increase over time for a weighted average basket of goods relevant to the Nicaragua. The productivity factor for TELCOR, "x", signifies the result of the average annual percentage decrease in the marginal cost of supplying one unit of service. As a result, this formula will allow tariff rates to be increased annually due to inflationary conditions, adjusted downwards by a productivity factor. After preliminary research, it appears that while this x may be a positive number in the future, it is likely to be between zero and one percent for the next five years because of the amount of capital investment and replacement of plant and lines necessary to increase penetration. PW will make recommendations for this formula in a separate report, however, the basic composition of the adjustment formula is given in **Exhibit Eleven**. The allowable rate of increase given by RPI-x will be applicable to telephone services on the whole. As a result, any increases made to individual tariffs per service would first need to be rebalanced by decreasing another tariff per service. After the rebalancing, the new basket of tariffs could be adjusted up to a maximum annual increase of RPI - x for the portion of the tariff covering Cordoba-based expenditures. For foreign-exchange based expenditures covered by the tariff, an RPI from the country in whose currency the expenditure is made would be appropriate.

2. Cordoba v.s. Other Currencies (Currency Corrector):

Although this subject area will also be covered in a later report, it is important to understand the situations in which a currency corrector should be a part of the tariff adjustment formula. Future tariff revisions should also take account for currency fluctuations. The devaluation of the Nicaraguan Cordoba in recent years has made it extremely important that the portion of the tariff covering \$U.S. expenditures at least keep pace with devaluation so as to continue to be able to repay and service foreign loans funding the investment program, as well as the foreign portion of operating expenses and the foreign exchange component of the required equity return after privatization. Unless Nicaragua is experiencing a period of hyperinflation, these tariff revisions should be made on an annual basis. It should be considered by the regulatory board, however, to define a maximum level of annual devaluation (ie. 30%) for the Cordoba to achieve which would allow for a tariff revision to be made before the end of the year.

In practical terms, as long as the sum total amount of outgoing U.S.\$ payments made by TELCOR for settlement, debt service and other are less than the total incoming U.S.\$ revenue received for settlement, then TELCOR really does not have to worry about the currency corrector. While this is presently the case, and should stay the case in the future, it is always possible that it could change, causing the currency correction factor to take on heightened importance for any net positive U.S.\$ exposure.

VIII. EXHIBITS

CURRENT TARIFF STRUCTURE

DOMESTIC CHARGES

(per minute): _____

	<u>Cordobas</u>	<u>U.S. equiv</u>
Local	0.033	0.005
Departmental	0.198	0.032
National Long Distance	0.396	0.065

		<u>Cordobas</u>			<u>U.S. equiv</u>				
		Person to Person		Tele to Tele		Person to Person		Tele to Tele	
		HP	HR	HP	HR	HP	HR	HP	HR
OUTGOING INTERNATIONAL:	traffic %:	30.1%	19.8%	34.6%	15.5%				
	Avg Tariff								
USA	18.54 =	23.00	17.25	17.25	14.38	3.770	2.828	2.828	2.357
Rest of World (except C.A.)	21.01 =	25.65	21.73	18.80	16.00	4.205	3.562	3.081	2.623
Costa Rica	3.51 =	4.79	3.83	2.88	2.01	0.786	0.628	0.472	0.330
Rest of C.A.	3.96 =	5.43	4.34	3.26	2.20	0.890	0.712	0.534	0.361

SETTLEMENT:

	<u>Cordobas</u>	<u>U.S. equiv</u>
USA	4.575	0.750
Rest of World (except C.A.)	9.150	1.500
Costa Rica	0.000	0.000
Rest of C.A.	0.000	0.000

Current Tariff: Calendar Year 1992

1992 Base Case	Traffic (Minutes)	Avg. Tariff (Cordobas)	Revenue (Cordobas)
<u>DOMESTIC CHARGES:</u>			
Local	204,651,431	0.033	6,753,497
Departmental	23,208,279	0.198	4,595,239
National Long Distance	7,069,933	0.396	2,799,693
<u>OUTGOING INTERNATIONAL:</u>			
USA	4,746,698	18.54	87,990,169
Rest of World (except C.A.)	2,338,014	21.01	49,113,909
Costa Rica	2,911,004	3.51	10,217,590
Rest of C.A.	2,235,662	3.96	8,862,677
TOTAL:			170,332,775
<u>INCOMING SETTLEMENT:</u>			
USA	26,885,047	4.575	122,999,088
Rest of World (except C.A.)	2,735,902	9.150	25,033,506
Costa Rica	-na-	0.000	0
Rest of C.A.	-na-	0.000	0
TOTAL:			148,032,594
<u>OUTGOING SETTLEMENT:</u>			
USA	4,746,698	4.575	(21,716,143)
Rest of World (except C.A.)	2,338,014	9.150	(21,392,828)
Costa Rica	2,911,004	0.000	0
Rest of C.A.	2,235,662	0.000	0
TOTAL:			(43,108,971)
TOTAL REVENUE:			<u>275,256,397</u>

COMUNICADO

TARIFAS DEL SERVICIO TELEFONICO, TELEX Y TELEGRAFICO NACIONAL E INTERNACIONAL

El Ing. Rolando Hivas II, Ministro Director del Instituto Nicaragüense de Telecomunicaciones y Correos (TELCOR), en uso de las facultades que le confiere el inciso F del Artículo 7 del decreto 1053, del 5 de junio de 1982, publicado en La Gaceta, Diario Oficial, número 137 del 12 de junio de 1982 comunica a la ciudadanía las nuevas tarifas de los servicios de telecomunicaciones nacionales e internacionales vigentes a partir del 11 de Enero de 1993.

SERVICIO NACIONAL	
CLASE DE SERVICIO	TARIFAS
DERECHO DE INSTALACION	CS 1,375.00
Teléfono automático	550.00
Teléfono magneto	1,375.00
Teléx	1,375.00
Línea arrendada	55.00
TRASLADO INTERNO	
TRASLADO EXTERNO	
Teléfono automático	825.00
Teléfono magneto	412.50
CAMBIO DE REGISTRO	110.00
CAMBIO DE NUMERO	137.50
RECONEXION	165.00
CUOTA FIJA MENSUAL	13.20
VALOR DEL IMPULSO	0.033
TELEGRAMAS (PALABRA)	
Ordinaria	0.165
Urgente	0.275
Especial	0.44
SERVICIO TELEFONICO PUBLICO (Sucursales)	
Valor de la llamada por 3 minutos:	
Llamadas Locales	1.00
Llamadas Intraregionales	2.00
Llamadas Interregionales	3.00
Llamadas a Zonas Especiales	5.00
Minuto Adicional	1.00

SERVICIO INTERNACIONAL											
REGION/PAIS	TELEFONICO						TELEX			TELE- GRAF	
	----- TRES MINUTOS MINIMO -----						MINUTO ADICIONAL			O DDI	
	PERSONA A PERSONA		SUPER		TELEFONO A TELEFONO		SUPER		REDUC		VALOR
	PLENA	REDUC.	REDUC.	PLENA	REDUC.	REDUC.	PLENA	REDUC.	REDUC.	P/MIN	P/PLBRA
USA y Canada	60.00	51.75	34.50	51.75	43.13	25.50	17.25*	14.38	8.63	17.25	2.01
Mexico y Belice	37.00	30.00	19.00	22.00	21.00	11.00	7.00	6.00	4.00	10.00	2.00
AMERICA DEL SUR*											
Grupo I	83.50	66.13	40.25	60.38	48.88	30.19	20.13	16.10	10.06	13.23	2.30
Grupo II	92.00	80.50	46.00	69.00	60.38	34.50	23.00	20.13	11.50	17.25	2.88
EL CARIBE	103.50	92.00	51.75	77.63	69.00	35.81	25.85	23.00	12.94	23.00	2.88
EUROPA**											
Grupo I	80.50	66.13	40.25	60.38	48.88	30.19	20.13	16.10	10.06	12.64	3.68
Grupo II	92.00	80.50	46.00	69.00	60.38	34.50	23.00	20.13	11.50	23.00	4.03
ASIA, AFRICA Y OCE	103.50	92.00	51.75	77.63	69.00	35.81	25.85	23.00	12.94	28.75	4.60
CENTRO AMERICA											
Guatemala	17.25	13.80	8.63	10.35	9.77	5.18	3.45	2.30	1.73	6.33	0.58
El Salvador	17.25	13.80	8.63	10.35	9.77	5.18	3.45	2.30	1.73	6.33	0.58
Honduras	14.38	11.50	7.19	8.63	8.05	4.31	2.88	2.01	1.44	6.33	0.58
Costa Rica	14.38	11.50	7.19	8.63	8.05	4.31	2.88	2.01	1.44	6.33	0.58
Panamá	34.50	27.60	17.25	20.70	19.55	10.35	6.90	5.18	3.45	10.35	1.15

* El Grupo I incluye Argentina, Brasil, Colombia y Chile
 El Grupo II es el resto de países de América del Sur
 ** El Grupo I incluye España, Italia e Inglaterra
 El Grupo II es el resto de países de Europa

NOTA: PLENA 07:00 - 19:00 HORAS
 REDUCIDA 19:01 - 23:00 HORAS
 SUPER REDUCIDA 23:01 - 06:59 HORAS

BEST AVAILABLE DOCUMENT



FY 1992 Financial Statement Summary

INCOME STATEMENT: Fiscal Year 1992 (000) Cordobas	
Total Operating Revenue:	265,318
Total Expenses:	<u>102,146</u>
Net Operating Income:	163,172
Other Expenses:	<u>139,904</u>
Net Income:	<u>23,268</u>

CASH FLOW STATEMENT: Fiscal Year 1992 (000) Cordobas	
Net Cash Flow from Operating, Investing and Financing Activities:	2,279
Cash and Cash Equivalents at Beginning of Year:	33,455
Net Change in Cash and Cash Equivalents:	<u>2,279</u>
Cash and Cash Equivalents at End of Year:	<u>35,734</u>

BALANCE SHEET: Fiscal Year 1992 (000) Cordobas			
Current Assets:	308,048	Current Liabilities:	150,084
Fixed Assets:	<u>123,489</u>	Long-Term Liabilities:	512,306
		Patrimonio:	(230,853)
Total Assets:	<u>431,537</u>	Total Liabilities:	<u>431,537</u>

Outgoing International Call Analysis

International Competition: USA Direct	
Length of Call:	5 minutes
Telephone-to-Telephone (1):	\$2.50
Person to Person (2):	\$6.00
<u>24 Hours/day:</u>	
First Minute Charge:	\$2.58
Additional Minutes:	<u>\$1.11</u>
Total Charge (1):	<u>\$9.52</u>
Total Charge (2):	<u>\$13.02</u>

TELCOR:
Before and After Tariff Rebalancing

Before Rebalancing:

Length of Call: 5 minutes

Average Charge (per minute):

Telephone-to-Telephone (1): \$2.68
 Person-to-Person (2): \$3.40

Total Charge (1): \$13.41
 Total Charge (2): \$16.98

After Rebalancing:

Length of Call: 5 minutes

Average Charge (per minute):

Telephone-to-Telephone (1): \$1.88
 Person-to-Person (2): \$2.58

Total Charge (1): \$9.40
 Total Charge (2): \$12.90

REBALANCED TARIFF STRUCTURE

DOMESTIC CHARGES

per minute):

	<u>Cordobas</u>	<u>U.S. EQUIV</u>
Local	0.190	0.031
Departmental	0.380	0.062
National Long Distance	0.570	0.093

Cordobas

U.S. EQUIV

OUTGOING INTERNATIONAL:

			<u>Person to</u>				<u>Person to</u>			
			<u>Person</u>		<u>Tele to Tele</u>		<u>Person</u>		<u>Tele to Tele</u>	
			<u>HP</u>	<u>HR</u>	<u>HP</u>	<u>HR</u>	<u>HP</u>	<u>HR</u>	<u>HP</u>	<u>HR</u>
	traffic %:		30.1%	19.8%	34.6%	15.5%				
	<u>Avg Tariff</u>									
USA	13.60	=	16.78	14.16	12.08	10.11	2.751	2.322	1.980	1.657
Rest of World (except C.A.)	15.15	=	18.68	15.75	13.50	11.25	3.062	2.582	2.213	1.844
Costa Rica	3.51	=	4.79	3.83	2.88	2.01	0.786	0.628	0.472	0.330
Rest of C.A.	3.96	=	5.43	4.34	3.26	2.20	0.890	0.711	0.534	0.361

SETTLEMENT:

	<u>Cordobas</u>	<u>U.S. EQUIV</u>
USA	4.575	0.750
Rest of World (except C.A.)	9.150	1.500
Costa Rica	0.000	0.000
Rest of C.A.	0.000	0.000

**Summary of Any Changes from Base Case Tariffs:
(Cordobas)**

	<u>Base Case:</u>	<u>Rebalanced:</u>
DOMESTIC CHARGES:		
Local	0.033	0.19
Departmental	0.198	0.38
National Long Distance	0.396	0.57

			<u>Base Case</u>				<u>Rebalanced</u>				
			<u>Person to</u>		<u>Tele to Tele</u>		<u>Avg.</u>	<u>Person to</u>		<u>Tele to Tele</u>	
			<u>HP</u>	<u>HR</u>	<u>HP</u>	<u>HR</u>	<u>Tariff</u>	<u>HP</u>	<u>HR</u>	<u>HP</u>	<u>HR</u>
OUTGOING INTERNATIONAL:	<u>Avg Tariff</u>										
USA	18.54	=	23.00	17.25	17.25	14.38	13.60	16.78	14.16	12.08	10.11
Rest of World (except C.A.)	21.01	=	25.65	21.73	18.80	16.00	15.15	18.68	15.75	13.50	11.25

TRAFFIC ELASTICITY

OF DEMAND:	<u>E</u>	<u>^ P</u>	<u>Original Traffic</u>	<u>New Traffic due</u>
			<u>000,000 minutes</u>	<u>to Tariff Change</u>
Local	-0.010	575.8%	204.651	192.868
Departmental	-0.005	191.9%	23.208	22.986
National Long Distance	-0.003	143.9%	7.070	7.039

OUTGOING INTERNATIONAL:

USA	0.050	73.4%	4.747	4.921
Rest of World (except C.A.)	0.030	72.1%	2.338	2.389

Tariff Rebalancing: Calendar Year 1992

	Traffic (Minutes)	Avg. Tariff (Cordobas)	Revenue (Cordobas)
<u>DOMESTIC CHARGES:</u>			
Local	192,868,470	0.190	36,645,009
Departmental	22,985,573	0.380	8,734,518
National Long Distance	7,039,404	0.570	4,012,460
<u>OUTGOING INTERNATIONAL:</u>			
USA	4,920,848	13.60	66,929,094
Rest of World (except C.A.)	2,388,611	15.15	36,198,361
Costa Rica	2,911,004	3.51	10,213,752
Rest of C.A.	2,235,662	3.96	8,859,280
TOTAL:			171,592,475
<u>INCOMING SETTLEMENT:</u>			
USA	26,885,047	4.575	122,999,088
Rest of World (except C.A.)	2,735,902	9.150	25,033,506
Costa Rica	-na-	0.000	0
Rest of C.A.	-na-	0.000	0
TOTAL:			148,032,594
<u>OUTGOING SETTLEMENT:</u>			
USA	4,920,848	4.575	(22,512,879)
Rest of World (except C.A.)	2,388,611	9.150	(21,855,793)
Costa Rica	2,911,004	0.000	0
Rest of C.A.	2,235,662	0.000	0
TOTAL:			(44,368,672)
TOTAL REVENUE:			<u>275,256,397</u>

ESTADOS DE CUENTA POR CORRESPONSAL - ENTRANTE SALIENTE
AÑO 1992

CORRESPONSALES	TOTAL ANUAL		
	ENTRANTE	SALIENTE	SALDO
A. T. & T.	US\$17,252,194.21	3,070,688.87	14,181,505.34
F.O	428,821.21	45,866.78	382,954.43
DEG	18,040.33	5,895.35	12,144.98
M . C . I	US\$ 1,910,957.88	20,700.00	1,890,257.88
U. S. SPRINT	US\$ 1,142,801.25	19,704.00	1,123,097.25
MEXICO	US\$ 144,339.37	184,268.00	(39,928.63)
PANAMA	US\$ 233,279.74	333,581.24	(100,301.50)
BELIZE	US\$ 5,315.29	9,586.70	(4,271.41)
F.O	0.00	1,861.84	(1,861.84)
CANADA	US\$ 1,074,375.76	184,319.02	890,056.74
F.O	62,910.04	0.00	62,910.04
DEG	5,664.53	180.23	5,484.30
REINO UNIDO	US\$ 102.82	36.59	66.23
F.O	204,861.40	331,355.90	(126,494.50)
DEG	2,375.32	8,797.89	(6,422.57)
ITALIA	F.O 688,893.97	305,878.21	383,015.76
DEG	0.00	982.43	(982.43)
ESPAÑA	F.O 1,125,572.57	1,507,249.34	(381,676.77)
DEG	15,171.08	42,635.43	(27,464.35)
ALEMANIA FED.	F.O 0.00	22,061.25	(22,061.25)
DEG	411,382.77	113,687.68	297,695.09
U.R.S.S.	US\$ 0.00	4,003.28	(4,003.28)
F.O	0.00	59,651.33	(59,651.33)
DEG	5,771.25	1,870.71	3,900.54
PUERTO RICO	US\$ 35,793.04	30,599.07	5,193.97
BRASIL	F.O 0.00	100,169.00	(100,169.00)
DEG	188,059.84	20,424.13	167,635.71
ISLAS VIRGENES	US\$ 1,146.09	154.54	991.55
HOLANDA	F.O 486.64	123,678.00	(123,191.36)
DEG	157,602.59	10,951.50	146,651.09
CHECOSLOVAQUIA	F.O 0.00	13,182.69	(13,182.69)
VENEZUELA	US\$ 90,672.30	51,491.80	39,180.50

ESTADOS DE CUENTA POR CORRESPONSAL - ENTRANTE SALIENTE
AÑO 1992

CORRESPONSALES	TOTAL ANUAL		
	ENTRANTE	SALIENTE	SALDO
NORUEGA	F.O 0.00	90,697.09	(90,697.09)
	DEG 46,692.17	0.00	46,692.17
COLOMBIA	US\$ 0.00	8,054.62	(8,054.62)
	F.O 322,890.20	116,028.98	206,861.22
TAIWAN	US\$ 5,407.76	0.00	5,407.76
	F.O 41,282.75	50,205.17	(8,922.42)
SUECIA	F.O 0.00	141,932.52	(141,932.52)
	DEG 100,355.23	13,288.32	87,066.91
BELGICA	DEG 48,462.04	33,458.19	15,003.85
FINLANDIA	F.O 78,920.59	53,672.68	25,247.91
SUIZA	F.O 348,083.97	130,921.72	217,162.25
REP. DOMINICANA	US\$ 24,909.33	24,438.04	471.29
DINAMARCA	DEG 46,472.93	0.00	46,472.93
T O T A L	US\$ 21,921,294.84	3,941,625.77	17,979,669.07
	F.O 3,302,723.34	3,094,412.50	208,310.84
	DEG 1,046,050.08	252,171.86	793,878.22

TELCOR: ATT Revenue Sensitivity Analysis \$U.S. (000)

Scenario

Scenario #		FY94	FY95	FY96
1	Settlement Rate: \$1.50			
	Outgoing Revenue	(6,938)	(8,257)	(10,232)
	Incoming Revenue	28,042	34,536	44,245
	Total:	21,104	26,278	34,013
2	Settlement Rate: \$1.45	FY1	FY2	FY3
	Outgoing Revenue	(6,706)	(7,982)	(9,891)
	Incoming Revenue	27,107	33,384	42,770
	Total:	20,401	25,402	32,879
	Difference from scenario 1	(704)	(876)	(1,134)
3	Settlement Rate: \$1.40			
	Outgoing Revenue	(6,475)	(7,707)	(9,550)
	Incoming Revenue	26,172	32,233	41,296
	Total:	19,697	24,526	31,746
	Difference from scenario 1	(1,407)	(1,752)	(2,267)
1a	Additional Loss to Staying at \$1.50: 3 months delay in receiving ATT payment PV @ 12%/annum for 3 months of incoming amount			
	Incoming Revenue	28,042	34,536	44,245
	PV Loss	(783)	(965)	(1,236)
	Outgoing Revenue	(6,938)	(8,257)	(10,232)
	Total:	20,321	25,314	32,777
	Difference from scenario 1	(783)	(965)	(1,236)
3a	Additional Gain for Lowering to \$1.40: 3% Increase in Incoming per year due to ATT marketing			
	Incoming Revenue	26,172	32,233	41,296
	Revenue Gain	785	967	1,239
	Outgoing Revenue	(6,475)	(7,707)	(9,550)
	Total:	20,482	25,493	32,985
	Difference from scenario 1	(622)	(785)	(1,029)
4	\$1.50 for FY94 volume, and \$1.40 for additional volumes: (Guaranteed for 3 years)			
	Incoming Revenue	28,041	34,103	43,185
	Outgoing Revenue	(6,938)	(8,169)	(10,012)
	Total:	21,104	25,933	33,152
	Difference from scenario 1	(0)	(345)	(861)
5	Settlement Rate:			
	\$1.50 5 months FY 94	\$1.35 2 months FY 95	\$1.25 2 months FY 96	
	\$1.40 3 months FY 94	\$1.30 6 months FY 95	\$1.20 10 months FY 96	
	\$1.35 4 months FY 94	\$1.25 4 months FY 95		
	Outgoing Revenue	(6,591)	(7,110)	(8,242)
	Incoming Revenue	26,640	29,739	35,642
	Total:	20,049	22,629	27,400
	Difference from scenario 1	(1,055)	(3,650)	(6,613)

Traffic Assumptions:

	FY94	FY95	FY96
Number of Working Lines:			
Managua	62,143	77,879	100,982
Interior	46,131	57,664	74,563
Total:	<u>108,274</u>	<u>135,543</u>	<u>175,545</u>
Traffic per Line (Minutes):			
Salientes:			
Managua	110.97	107.64	104.41
Interior	51.03	45.93	41.34
Entrantes:			
Managua	295.44	286.58	277.98
Interior	412.50	412.50	412.50
Total Traffic (Minutes):			
Salientes:			
Managua	6,896,009	8,361,341	10,543,570
Interior	2,354,065	2,648,498	3,096,965
Total:	<u>9,250,074</u>	<u>11,009,837</u>	<u>13,642,535</u>
Entrantes:			
Managua	18,359,528	22,261,176	28,071,081
Interior	19,029,038	23,786,297	30,922,186
Total:	<u>37,388,565</u>	<u>46,047,473</u>	<u>58,993,267</u>

International Settlement Revenue

Exchange Rates:

U.S.\$/F.O.	0.3941
U.S.\$/D.E.G.	1.3800
U.S.\$/CS	6.0000

OUTGOING INTERNATIONAL REVENUE:

	<u>U.S.\$</u>	<u>F.O.</u>	<u>D.E.G.</u>	Total <u>U.S.\$</u>	Total <u>CS</u>
U.S.A.	3,111,093	45,867	5,895	3,137,305	18,823,827
Spain	0	1,507,249	42,635	652,848	3,917,087
Panama	333,581	0	0	333,581	2,001,487
Canada	184,319	0	180	184,568	1,107,406
Mexico	<u>184,268</u>	<u>0</u>	<u>0</u>	<u>184,268</u>	<u>1,105,608</u>
Total:				4,492,569	26,955,416
Total for all countries in world:				<u>5,510,503</u>	<u>33,063,018</u>
% of outgoing revenue to top five countries:				81.53%	81.53%

INCOMING INTERNATIONAL:

	<u>U.S.\$</u>	<u>F.O.</u>	<u>D.E.G.</u>	Total <u>U.S.\$</u>	Total <u>CS</u>
U.S.A.	20,305,953	428,821	18,040	20,499,848	122,999,090
Spain	1,125,573	0	15,171	1,146,508	6,879,049
Canada	1,074,376	62,910	5,665	1,106,986	6,641,914
Germany	<u>0</u>	<u>0</u>	<u>411,383</u>	<u>567,693</u>	<u>3,406,160</u>
Total:				23,321,035	139,926,212
Total for all countries in world:				<u>24,672,099</u>	<u>148,032,594</u>
% of incoming revenue from top four countries:				94.52%	94.52%

Estimated Tariff Comparison to Similar Administrations:
Fiscal Year 1991 Data (U.S.\$)

		<u>Bahrain</u>	<u>Bolivia</u>	<u>Costa Rica</u>	<u>Guatemala</u>	<u>Honduras</u>	<u>Jordan</u>	<u>Nicaragua</u>	<u>Panama</u>	<u>UAE</u>	<u>Zimbabwe</u>
Revenue per Line		1,294	349	468	647	849	409	800	726	1,006	568
Lines in Service		100,581	185,138	304,863	191,938	94,400	272,273	50,000	229,389	480,511	127,072
Total Revenue:		130,101,524	64,583,540	142,752,100	124,177,091	80,147,488	111,468,076	40,000,000	166,510,998	483,274,419	72,117,020
<u>Revenue per Service:</u>											
	<u>Est. %</u>										
International Outgoing	72%	93,673,097	46,500,149	102,781,512	89,407,506	57,706,191	80,257,015	28,800,000	119,887,918	347,957,582	51,924,254
National and Departmental	9%	11,709,137	5,812,519	12,847,689	11,175,938	7,213,274	10,032,127	3,600,000	14,985,990	43,494,698	6,490,532
Local	19%	24,719,289	12,270,873	27,122,899	23,593,647	15,228,023	21,178,934	7,600,000	31,637,090	91,822,140	13,702,234
<u>Traffic per Service (Minutes 000,000)</u>											
International Outgoing		62.3	15.6	5.7	19.0	48.0	41.8	9.5	7.0	262.3	703.2
National and Departmental		19.8	114.0	552.3	108.1	104.2	176.8	90.7	159.7	1105.7	629.8
Local		968.4	0.4	857.7	-na-	644.2	2461.2	1520.0	1002.2	-na-	325.5
<u>Estimated Tariff per Service (U.S.\$):</u>											
	<u>Average</u>										
International Outgoing	\$1.996	1.50	2.98	18.07	4.71	1.20	1.92		17.08	1.33	0.07
National and Departmental	\$0.054	0.59	0.05	0.02	0.10	0.07	0.06		0.09	0.04	0.01
Local	\$0.024	0.03	27.45	0.03	-na-	0.02	0.01		0.03	-na-	0.04

* The percentage breakdown used in the revenue per service section estimates the approximate breakdown of total revenue in Exhibit Five A, after TELCOR tariff rebalancing.

* Estimated tariffs from: Costa Rica, Guatemala, Panama and Zimbabwe international; Bahrain national and departmental, as well as Bolivia local were not included in the average estimated tariff because they were considered to be either outliers or inaccurately calculated using the underlying assumptions of this analysis.

FACSIMILE TARIFF STRUCTURE

1992 Base Case

<u>INTERNATIONAL CHARGES:</u> <u>(\$0.00 per minute)</u>	<u>Direct Dial</u>		<u>Fax %</u>
	<u>Full rate</u>	<u>NICAFax</u>	<u>Discount</u>
U.S.A.	17.25	11.50	-33.33%
Canada	17.25	11.50	-33.33%
Avg. Europe	21.57	14.40	-33.23%
Avg. Central America	4.43	3.55	-19.80%
Nicaragua: national long distance	0.40	0.60	51.52%

Rebalanced Tariff

<u>INTERNATIONAL CHARGES:</u> <u>(\$0.00 per minute)</u>	<u>Direct Dial</u>		<u>Fax %</u>
	<u>Full rate</u>	<u>NICAFax</u>	<u>Discount</u>
U.S.A.	12.08	11.50	-4.79%
Canada	12.08	11.50	-4.79%
Avg. Europe	14.94	14.40	-3.58%
Avg. Central America	4.43	3.55	-19.80%
Nicaragua: national long distance	0.57	0.60	5.26%

RPI-x (Annual Tariff Adjustment Factor to the Weighted Basket)1) Determine RPI-x:

$$\text{RPI-x} = \text{Adjustment Factor (Ft)} = (1-x) * (1 + (K_t - (K_t - 1)) / (K_t - 1))$$

x: Annual productivity factor % 1%
 K_t: Nicaraguan Retail Price Index for current period 105
 K_{t-1}: Nicaraguan Retail Price Index for prior period 100

$$(F_t) = 1.0395 = ((1 - 0.01) * (1 + ((105 - 100) / 100)))$$

2) Determine weighted basket of telephone services:

<u>Service:</u>		<u>Est. Rebalanced # Minutes (000,000)</u>	<u>Weighting Factor</u>	<u>Price per Unit (C\$)</u>
Local	L	193.3	82.00%	0.183
Departmental	D	23.0	9.76%	0.396
National Long Distance	N	7.0	2.97%	0.546
International (Avg Outgoing)	I	12.4	5.28%	9.250
		235.7	100.00%	
Rebalanced Weighted Basket =		{.183*.82} + {.396*.0976} + {.546*.0297} + {9.25*.0528}		
=		0.693		

3) Any Change in one tariff/service necessitates a change in other tariff(s)/service until total Rebalanced Weighted Basket Figure sums to prior amount, accounting for changes in traffic due to price elasticity:

<u>Elasticity of Demand Figures:</u>	<u>E</u>	<u>Est. Rebalanced # Minutes (000,000)</u>	<u>Weighting Factor</u>	<u>Rebalanced Price per Unit (C\$)</u>
Local	-0.010	192.6	81.93%	0.250
Departmental	-0.005	23.0	9.78%	0.396
National Long Distance	-0.003	7.0	2.98%	0.546
International (Avg Outgoing)	-0.050	12.5	5.31%	8.168
		235.1	100.00%	
Rebalanced Weighted Basket =		{.183*.82} + {.396*.0976} + {.546*.0297} + {9.25*.0528}		
=		0.693		

4) Apply Annual Adjustment Factor to each tariff/service to arrive at next period's adjusted tariff level:

	<u>Adjustment Factor</u>	<u>Rebalanced Price per Unit (C\$)</u>	<u>Adjusted Price per Unit (C\$)</u>
Local	1.0395	0.250	0.260
Departmental	1.0395	0.396	0.412
National Long Distance	1.0395	0.546	0.568
International (Avg Outgoing)	1.0395	8.168	8.491

TARIFF SUMMARY

(Cordobas)

OUTGOING INTERNATIONAL	Current Tariff						Rebalanced Tariff					
	Person-to-Person			Tele-to-Tele			Person-to-Person			Tele-to-Tele		
	HP	HR	SR	HP	HR	SR	HP	HR	SR	HP	HR	SR
USA	23.00	17.25	11.50	17.25	14.38	8.63	16.78	14.16	9.44	12.08	10.11	7.08
<u>Rest of World (except C.A.)</u>												
Canada	23.00	17.25	11.50	17.25	14.38	8.63	16.78	14.16	9.44	12.08	10.11	7.08
Mexico and Belize	12.33	10.00	6.33	7.00	6.00	4.00	12.33	10.00	6.33	7.00	6.00	4.00
Panama	11.50	9.20	5.75	6.90	5.18	3.45	11.50	9.20	5.75	6.90	5.18	3.45
South America I	26.83	22.04	13.42	20.13	16.10	10.06	18.59	15.02	9.29	13.94	10.87	6.97
South America II	30.67	26.83	15.33	23.00	20.13	11.50	21.25	18.28	10.62	15.93	13.59	7.97
The Caribbean	34.50	30.67	17.25	25.88	23.00	12.94	23.90	20.90	11.95	17.92	15.53	8.96
Europe I	26.83	22.04	13.42	20.13	16.10	10.06	18.59	15.02	9.29	13.94	10.87	6.97
Europe II	30.67	26.83	15.33	23.00	20.13	11.50	21.25	18.28	10.62	15.93	13.59	7.97
Asia and Africa	<u>34.50</u>	<u>30.67</u>	<u>17.25</u>	<u>25.88</u>	<u>23.00</u>	<u>12.94</u>	<u>23.90</u>	<u>20.90</u>	<u>11.95</u>	<u>17.92</u>	<u>15.53</u>	<u>8.96</u>
<u>Rest of World Avg. (w/o C.A.)</u>	25.65	21.73	12.84	18.80	16.00	9.45	18.68	15.75	9.47	13.50	11.25	6.93
Costa Rica	4.79	3.83	2.40	2.88	2.01	1.44	4.79	3.83	2.40	2.88	2.01	1.44
<u>Rest of C. America (C.A.)</u>												
Guatemala	5.75	4.60	2.88	3.45	2.30	1.73	5.75	4.60	2.88	3.45	2.30	1.73
El Salvador	5.75	4.60	2.88	3.45	2.30	1.73	5.75	4.60	2.88	3.45	2.30	1.73
Honduras	<u>4.79</u>	<u>3.83</u>	<u>2.40</u>	<u>2.88</u>	<u>2.01</u>	<u>1.44</u>	<u>4.79</u>	<u>3.83</u>	<u>2.40</u>	<u>2.88</u>	<u>2.01</u>	<u>1.44</u>
<u>Rest of C.A. Average:</u>	5.43	4.34	2.72	3.26	2.20	1.63	5.43	4.34	2.72	3.26	2.20	1.63