

EXCHANGE AREA TRANSMISSION OBJECTIVES

1.00 GENERAL

1.01 An important consideration in establishing and using transmission objectives is that the customers' views are affected by the state of the art and the general standard of living. Consequently, the transmission objectives should generally be directed toward giving the customer what he wants and at a price which he can afford.

1.02 As a result of customer opinion surveys and extensive tests, it is clear that the average telephone customer prefers a received volume range substantially better than is now obtained on most connections. In fact, he does not appear to be completely satisfied with anything poorer than the transmission which he obtains on a local connection in his own central office. In the present state of the art, it is not practicable to provide transmission of this grade on all telephone connections due to cost limitations. Therefore, the suggestions given in this section are tempered by consideration of the economics involved.

2.00 OBJECTIVES—THE NATURE OF

2.01 The title of this section has been changed, for in earlier issues it was known as "Transmission Standards." Objectives are now thought of not in the terms of standards or limits but in terms of a transmission distribution curve with weight being given both to average and limiting transmission.

2.02 It seems reasonable when looked at from this angle that a good objective would be to provide transmission with such a distribution that our subscribers would consider as *good* a large percentage of their calls (say 95%) and would rate substantially none as *poor*, and these only as a result of correctible troubles in the plant. The remaining 5% might be considered fair. This objective is approximately what is attained by customers in single building areas at the present time.

3.00 PRACTICAL CONSIDERATIONS

3.01 As progress is made in other fields and as the general standards of living improve, transmission objectives should also tend toward better and better values. Economic considerations may presently limit the rate of this progress toward this objective, but the telephone art also will advance and it can be anticipated that better and better transmission will be attainable in the future without substantial increase in cost. For the present, however, some com-

promises have to be made between what the customer prefers and the cost of giving such service.

3.02 In view of the economic factors it would not appear practicable to suggest that the plant be designed so that all customers would obtain on all connections the same range of transmission volumes that they now obtain in a single office area. To do so, would mean that trunks between all offices would have to operate at zero db loss which would involve excessive costs in many cases and in some cases would be impractical with present instrumentalities. It is, therefore, suggested for the next few years that transmission between any two offices in the same exchange area be based on

- (a) the loops being designed in accordance with the principles outlined in Section AB22.075 and,
- (b) The trunks between the offices being designed to a loss of not more than 4 to 6 db.

This will mean that somewhat less than 95% of the interoffice connections would be rated "good" and somewhat more than 1% would be called "poor" as compared to the long term objective of 95% and 0% respectively.

4.00 SWITCHED CONNECTIONS

4.01 One important consideration in establishing transmission objectives is to avoid contrasts due to alternate routing. This means that in all areas where tandem offices are utilized for overflow traffic normally routed on direct trunks between offices in the same exchange area, the tandem trunks should have as an objective a loss of not more than 2 to 3 db so that two of them can be connected together and the same transmission obtained as on a direct connection. This permits complete freedom to the traffic engineer in the selection of quantities for overflow in the layout and design of interoffice and tandem trunks.

4.02 The philosophy of "via net loss design" in the toll plant suggests that the toll connecting trunks in an exchange area be engineered to VNL + 2 db. This means that, in general, such trunks will have as their transmission objective the same 2 or 3 db as has been suggested above for tandem trunks. This is a fortunate circumstance as there is a growing tendency for toll connecting and tandem trunks to be used more or less interchangeably in some routing plans and the fact that they can be engineered to the same transmission objective simplifies engineering procedures.

5.00 ROOM NOISE, LINE NOISE AND MISCELLANEOUS ITEMS

5.01 In the earlier issues of this practice it was suggested that some consideration be given to central office areas having room noise levels differing substantially from those which were considered in establishing the transmission reference system. However, under modern conditions of living, noise disturbances from radio, TV and other adjuncts to home life tend to eliminate those differences. In the future, therefore, in establishing objectives it is proposed that no weight be given to differences in ambient noise but that locations where high room noise appears to be a problem will be considered on a special engineering basis requiring special subsets or other remedial measures.

5.02 Likewise, no weight in establishing objectives is given to line noise or noise originating in central office equipment. It is now considered that the proper procedure is to locate and correct these sources of noise rather than to modify transmission objectives.

5.03 Similarly, in the past, transmission standards have been adjusted in some cases to care for excessive bridged tap losses resulting from special outside plant factors. Under "resistance design" procedures bridge taps are limited in length and where excesses exist it is proposed in the future that attention be given to remedying these conditions rather than modifying transmission objectives to take them into account.

6.00 CUSTOMER SATISFACTION

6.01 This section deals primarily with transmission design objectives utilized by the engineers in laying out the plant. If the plant is actually installed so as to meet these design objectives, a reasonable degree of customer satisfaction can be anticipated. However, if ineffective engineering methods or inadequate maintenance procedures result in failure to attain the design objectives, increasing customer dissatisfaction will result and will show up both in customer opinion surveys and other methods used for checks on the over-all condition of the plant.