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PAYING FOR RESEARCH

1. This paper is offered as a basis for discussion. It is realised that the levy may not be an appropriate mechanism for operating a research agreement in all cases.

2. In the past the research carried out by B.A.T. H.Q. has been paid for by B.A.T. in the U.K. The cost has been partly offset by contributions from Associated Companies as part of advisory fees, or in the case of B. & W. under a "Cost and Risk Sharing Agreement". In the current year this latter Agreement has meant that B. & W. are contributing less than Malaya, Switzerland or Holland for example.

3. It is now proposed that all R. & D. done by operating companies should properly be regarded as done for the Company and paid for by the Company concerned. The product from such R. & D. therefore would become the property of the operating company for exploitation anywhere.

4. Member companies however would agree certain ground rules for the exploitation of such research product and for the exchange of information and avoidance of unwanted duplication. (See Appendix I).

5. The R. & D. directed from the Centre calls for special consideration. Of the total budget of about £4 million some £2.5 million can be identified as research in support of general Group strategy (see Appendix II) while the remainder can be regarded as self-financing or as the responsibility of the Centre.

6. It is suggested that the identified Central Group research should be financed by a levy on sales by Companies. This levy would amount to 0.15% Net Turnover.

7. It is believed this method could have advantages because it would have acceptance by Authorities to treating this charge as a deduction for tax in the paying country, there would be more chance of obtaining Exchange Control approval to remit and adjustment for inflation would be automatic.

8. It is essential to get proper financing of our longer range research. It may be that some structural change (e.g.

the cr[illegible] of a [illegible] research company [illegible] might [illegible] useful in order to facilitate further [illegible] involvement of the major companies if this [illegible] desirable. However, it is hoped to get agreement in principle now with the major companies and commitment both to the aims of central research and the contributions involved (See Appendix III).

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BATCo document for Province of British Columbia 20 April 1999

Annex 1

1. Marketing and consumer research, manufacturing improvements and product development techniques and methodology should be exchanged freely. Although the bigger facilities in the operating companies might be expected to make bigger inputs the size of these facilities is in proportion to company sales, weighted for market sophistication, and all companies will therefore benefit appropriately.

2. Product developments, if successful, will be reflected in profits. Successful brands are the desired outcome and compensation will accrue to the producer in licensing such brands to users.

3. Product and process developments which are patentable should be protected by the inventors and such inventions become licensable to users inside and outside the Group.

4. There should be a general agreement between all Tobacco companies in the Division to give first options, lead times and "most favoured nation" treatment to other companies in the Division with respect to product and process patents. It would also be agreed that exclusive licenses will not be granted to competitors.

5. Machinery developments which are patentable may be licensed exclusively to appropriate machinery producers but the interests of the Division would be protected in order to give all member companies preferential or 'no less favourable' terms.

6. For all patents the inventing company would protect in such countries as it sees fit but in all cases Divisional H.Q. should be consulted and suitable arrangements made to assign or protect in such other countries as may be required.

7. In order to eliminate unnecessary duplication and to make R&D as effective as possible the companies will agree to keep each other informed on programmes, to exchange methodology and to pool results subject to patent protection mentioned above.

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The Research & Development Department Budget is attached. In this Tobacco Research Council costs of £156,000 are included under Biological Research and Information. If these are deducted the total Group research offered for recovery is £2,441,000 under the five headings:

(1) Biological Research and Information
(2) Product Research
(3) Smoker Research
(4) Process and Engineering Research
(5) New Smoking Material Research

Description of the aims and scope of the work involved.

The aims have all been reviewed and agreed at Montreal in 1976.

(1) Biological Research and Information

Aim: To put the Group in a position to understand the relevance and importance of advances made anywhere in this field and to establish methods whereby the biological activity of tobacco smoke from different products can be compared using tests which may be related to diseases or benefits attributed to smoking in order to guide general product development, investment or the development of specific products.

This has necessitated setting up biological facilities using small animals as well as other test procedures. The in-house animal work to date has been concentrated successfully on producing measured doses of smoke which are inhaled by animals and reach the target organs in sufficient quantity. As a consequence, test procedures are available which may be related to specific diseases. It is believed that BAT are now as far advanced in some techniques as any others and we have sufficient basic knowledge to engage in dialogue on an equal footing with Government agencies. While the main thrust is product orientated, it is intended to continue research work into the effect of smoke on animals and biological systems in order properly to assess the value of the work of others and to further our own procedures.

External contract work covers both medium and long term mouse skin painting and is designed to guide the principles upon which product design should be founded. The studies cover the various forms of reconstituted tobacco and tobacco substitu and are also intended to counter any suggestion that nicotine could be related to carcinogenicity.

The examination of the possible health consequences arising from the use of additives on tobacco products is also an important activity and certain additives are subject to detailed study.

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[illegible] programme [illegible] directed by U.K. staff is greatly [illegible] the [illegible] of [illegible] Company R & D [illegible] which is particularly [illegible] with [illegible] for specific company product development or for specific company products [illegible] in the [illegible] charged directly, where this was possible.

There is continuing support for the work of TRC, which is being directed towards the examination of cardio-vascular disease.

Finally, an important aspect of the whole work is the provision of a sound information service.

(2) <u>Product Research</u>

<u>Aim</u>: The advancement of technical knowledge necessary to combine the components of cigarettes to produce predictable effects.

To this end, it is necessary to understand the ways which are available for controlling the production, composition and filtration of smoke in any required direction. It is also necessary to establish the desired directions in which these controlling influences should move. Work is, therefore, in hand with the objective of understanding and explaining the effects of tobacco blend, cigarette paper and filters, individually, and in combination, on the detailed physics and chemistry of smoke. Associated with this is the use c sophisticated techniques for identifying and quantify: tobacco and smoke constituents.

It is necessary to find out what effects are importa consumer terms. One method of approaching this for exa s been to examine in great detail the products on a p r market and identify patterns which uniquely deser titors' products. The development and advance-ment y assessment techniques is fundamental to appro this area, including passive smoking.

There is also an increasing pressure from many author to measure and report the delivery of increasing numbe smoke constituents, either on the packet or in leagu les. Means of dealing with this and anticipating futur velopments are necessary. The influence of micro-biolo l control, factory hygiene and pesticides on cigar s and the study of nicotine and the search for alter ves are projects arising wholly or in part from this area.

The concept of total product design is now well known.

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3. Smoker Research

Aim: To establish, in objective terms, why people smoke, how they smoke and the effect of product characteristics on smoker response, in order that preferred cigarettes may be designed.

In order for any effective studies to be carried out on smokers, it has first been necessary to ensure the free and willing co-operation of a large number of people, who are prepared to act as experimental subjects. A large proportion of the staff at G.R & D.C. are taking part in the experimental programme.

It has been necessary to develop reliable objective ways of observing and measuring how people smoke and to couple with this the construction of equipment for reproducing smoking patterns. This has opened the door to finding out the ways in which different smokers smoke a given cigarette and the factors which influence this behaviour, i.e. personality, sex, motivation, etc. It has also led the way to determining the manner in which smokers modify their habits when changing from one product to another of different construction and to their compensatory reactions.

The rewards of smoking which are sought by smokers range from the purely psychological to a variety of physiological effects, some of which may be related to personality. The use of electro-encephalography to study the effects of smoking on brain activity (particularly alpha waves) is leading to the better understanding of these effects and might point to their influence on preference.

4. Process and Engineering Research

Aim: To pursue longer range developments in tobacco and filter processing and handling techniques, so as to establish both methods and guidelines whereby the quality of the product can be improved, tobacco used more efficiently, greater control exercised over the packaged product and cost reductions realised.

The work on process and engineering which is done for the whole Group rather than any particular company, has in the past been both of a long and short term nature. On the primary processing side, there is a continuing demand for knowledge, understanding and assistance with the implementation of methods for expanding tobacco. Recent product developments have pointed to possible advantages of these materials in low delivery cigarettes, as opposed to the simple use in cost saving, for example.

The developing need for specifying cigarette deliveries, particularly the labelling of packages, has meant that work on controlling these properties through the leaf plant and primary process is of increasing importance. New equipment design has also been called for.

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To improve product quality it is necessary to understand the interaction of machinery with the product, particularly secondary machinery. Techniques are being established for the assessment of machine performance and operation. Current machine performance characteristics are being examined and the effect of fault detection and anticipation on machine efficiencies is being determined. The development of new filters and an examination of the control and understanding of filter hardness are also current examples of work under this head.

5. New Smoking Materials Research

Aim: To develop the options and the technology for the production of smoking materials having desirable subjective smoking characteristics and physical properties compatible with tobacco manufacture, while possessing improved and/or controlled smoke properties with optimisation of cost.

With this aim, both tobacco and non-tobacco smoking materials are under development - in particular PRT and BATFLAKE respectively - with the option of moving to hybrid formulations of PRT and PCL.

In the PRT-71 programme, the possibility will be studied of a small plant which itself would provide a better way in for any company, big or small, to use reconstituted tobacco and hybrids for the reduction of biological activity. The examination is being made of whole plant reconstitution, cultivation, harvesting and curing specifically for PRT. The use of additives - which could lead to hybrid formulations - to control smoke deliveries and, in particular, to reduce CO, are under investigation. The effects of process variables are also being studied.

With the trend to low delivery cigarettes, the probable need to enhance nicotine transfer and to impart positive flavour attributes to the smoke, is also recognised.

Although it is seen that effort should concentrate on achieving the objectives by tobacco reconstitution, the development of BATFLAKE - a non-tobacco smoking material - is continuing. If BATFLAKE is to be acceptable to the consumer at significant levels in cigarette blends, improvement in ash properties is required and efforts are being concentrated on this aspect. All the biological testing of new smoking materials is covered in the Biological Research programme.

In order to appraise the Group of external developments, the evaluation of competitors reconstituted tobaccos and non-tobacco smoking materials will continue.