

RESEARCH CONFERENCE

15th-18th September 1980

Sea Island, Ga

PRESENT:

Mr. R.M. Gibb  
Herr E. Rittershaus  
Dr. R.A. Sanford  
Dr. C.J.P. de Siqueira  
Mr. T.I. Wilson

Dr. L.C.F. Blackman  
Mr. A.L. Heard  
Mr. R.J. Pritchard

401099079

CONTENTS

	<u>PAGE</u>
OBJECTIVES	1
SUMMARY OF MAIN POLICY POINTS	1
ROLE AND FUNDING OF GROUP R&D	2
1981 BUDGET AND 3-YEAR FORECASTS	2
1980 GROUP R&D PROGRAMME	2
STRATEGY ON SMOKING ISSUES	3
HEALTH-RELATED RESEARCH	3
SIDESTREAM	4
FILTERS	4
COMBUSTION	5
FLAVOURS	5
SENSORY TESTING	5
EXPANDED TOBACCO	6
PRIMARY PROCESSING	6
INSTRUMENTATION	7
VENTILATION	7
SECONDARY AUTOMATION	7
COMMUNICATIONS/SECURITY	8
PATENTS	8
REVIEW OF PROGRESS	8
1981 RESEARCH CONFERENCE	8

08066010P

OBJECTIVES

To confirm the policy of "Group R&D", to assess progress made in the major areas of the 1980 Programme, and to establish guidelines for the formulation of a 1981 Programme that reflects the major technical needs and priorities of the BAT Group.

SUMMARY OF MAIN POLICY POINTS

The key responsibility of the annual Research Conference is to recommend to the BATCo Management Board the shape of the Group R&D Programme.

Group R&D should provide basic building blocks upon which operating companies can make commercial developments.

Operating companies should share the cost of Group R&D on the basis of relative annual turnover, rather than on an arbitrary percentage levy on turnover.

The annual Group R&D Programmes and budgets should be presented in the context of rolling 3-year forecasts stated in constant money terms.

401099081

ROLE AND FUNDING OF GROUP R&D

1. In supporting Group R&D, CAC companies look to Southampton to provide basic building blocks which have commercial applicability or relevance to the needs of operating companies.
2. There should be a clear identification of Group R&D within the total activity and expenditure at Southampton. The Conference wished to be kept aware, however, of the whole activity.
3. The key responsibility of the annual Research Conference is to recommend to the BATCo Management Board the shape of the Group R&D Programme.
4. The CAC companies are concerned with "value for money", since they have to justify their contribution to Group R&D against their own in-house company R&D expenditure.
5. The basis of sharing the cost of Group R&D should be the relative annual turnover of companies, not an arbitrary percentage levy on turnover.
6. It was recognised that 21% of the current gross expenditure was neither recovered by direct charges, nor covered by the current Levy Allocation. It was also recognised that on a strict cost-sharing basis, non-CAC companies would contribute 40% of the Group R&D cost. This was thought to be equitable because, although their needs for new technology tend to follow the CAC companies with, say, a 5-10 year delay, non-CAC companies are always in a position to benefit from past Group researches.

1981 BUDGET AND 3-YEAR FORECASTS

7. The 1981 budget, and the forecasts for 1982-3, should be expressed in fixed money values, so that the sensitivity of the costs to staff numbers and to changes in programmes and facilities can be readily assessed.
8. The reductions in staff numbers and expenditure achieved to date, and those planned through 1983, were commended - as was the commitment to look for further reductions in the non-technical areas. This slimming of the R&D effort, without detriment to the technical needs of the Group, was in line with action being taken by other companies.

1980 GROUP R&D PROGRAMME

9. The Conference discussed the key elements of the 1980 Programme - which was formulated following the Conference in October 1979 and approved later by individual discussion with CAC companies - and made comments relevant to the formulation of the 1981 Programme.

401099082

STRATEGY ON SMOKING ISSUES

10. The cigarette industry is being confronted with rapidly changing anti-smoking pressures and emphasis, but not with significant changes in the related technologies. It was important, therefore, that all health-related work should be reappraised to ensure that it has the right objectives and priorities to fit the changing environment.
11. The background to the meetings at Southampton with representatives of the British Medical Association was explained. While medical researchers around the world are capable of interpreting research findings (albeit they may not all choose to acknowledge the advances that have already been made by the cigarette industry), most doctors are ill-informed on the facts, and merely follow a mandate to adopt an anti-smoking stance. The CAC representatives wish to be appraised of the context of the material presented to the BMA, and of any significant feedback from the discussions.
12. In adopting a more open stance on health-related research, based primarily on the achievements of the industry in the development of low delivery products, consideration should be given to balancing the discussion by reference to benefits of smoking, particularly in psychological terms.

HEALTH-RELATED RESEARCH

13. The specific conclusion in the Position Paper on nicotine that caution is required in the development of low delivery products with higher than average nicotine/tar ratios was not accepted for the following reasons:
  - (a) experiments to date (mainly mouse skin) on augmented nicotine levels may not be scientifically valid;
  - (b) the weight of evidence remains that if nicotine does have specific activity, the level is likely to be much lower than that of tar;
  - (c) there is the possibility that nicotine may exhibit certain countervailing beneficial effects on the circulatory system in humans.
14. There is clearly the need for a better understanding of the role of nicotine in carcinogenesis and in cardiovascular response. Further consideration should be given to the value of studies of the influence of the sources of nicotine, and of the "environment" in which it exists in smoke. In particular, the relative biological activity of nicotine from different delivery levels products (say, 1, 3, 10, 20 mg tar) should be established.

401099085

15. The renewed interest of Hunter and others (cf. Cold Spring Harbour Conference) in the "quality" of smoke and condensate was noted. While not requiring major revival of effort at GR&DC, some attention should be paid to possible differences in the smoke and condensate from very low (1-5 mg tar) delivery products.
16. The position paper on short-term bioassays summarised the present understanding of the art. A critique was requested to show what tests are in use at Southampton, and elsewhere in the Group, what gaps exist, and what the recommendation is for assessing new components e.g. flavours and additives.
17. The finding that Maryland tobacco (and air-cured tobaccos generally) lead to lower retention of smoke in humans should be explored to find ways of developing commercially viable flue-cured and blended products.
18. The relevance of the chance finding with rats that irritation may influence the depth of inhalation of smoke should be established with human smokers - using non-biological methods.
19. The research into the source and mechanism of formation of nitrosamines in both sidestream and mainstream should be continued with urgency.

#### SIDESTREAM

20. There was strong support for research into the generation and control of sidestream smoke. Factors investigated should include the role of pH on sidestream nicotine and aroma. Research into the attitude of smokers and non-smokers to substantial reduction or elimination of sidestream smoke should be established.
21. Effort should be directed to developing a smoking article with greatly reduced tobacco content to reduce the material available for generation of sidestream.

#### FILTERS

22. Research into the selective filtration of gas phase components is a priority area. There was doubt, however, as to the general commercial use of the NOx filter containing C-nitrosobenzene because of the unfortunate ready association of its name with nitrosamines.
23. The development of the HEE filter in its present form should be completed with all speed. To support its possible commercial use, there must be a complete understanding of:
  - effect on gas phase, especially CO
  - applicability to different tobaccos, papers, machines
  - performance with low delivery products
  - smoker behaviour
  - the patent position.

401099084

Even if no evidence is found of a subjective consumer advantage of an equal delivery per puff, the concept of the HEE filter could still provide an important marketing concept.

24. As soon as the HEE development is complete, there should be a return to basics - to research the concept of achieving a flat puff profile by novel and patentable filter designs.
25. Polypropylene filters could be an important alternative to cellulose acetate in the future. It was thought that the possible linking with Hercules, to develop and manufacture spunfibre products, was of potentially greater significance to the Group than the existing "Bridon project". Either way, it is important to establish possible product advantages of polypropylene in terms of, e.g. nitrogen oxides and nitrosamines.

#### COMBUSTION

26. The basic combustion programme is the key to advancing cigarette design. CO is of paramount importance, but the further understanding of the performance of tobaccos, additives, nitrogen oxides, nicotine transfer, etc., must also be pursued.

#### FLAVOURS

27. The broad approach of the flavours research programme was confirmed. The emphasis of the work, which complements the leaf research programme in Brazil, should be on natural flavour precursors or enhancers that have a high compatibility with specific tobaccos. Interaction with flavour houses should be limited to obtaining new flavour fractions or compounds for subsequent modification by reaction or formulation for specific tobacco types.
28. The difference in flavour characteristics between different tobacco types should be established in chemical terms. Consideration should be given to both genetic and environmental factors - and also to the possibility of up-grading poor tobaccos by selective removal of adverse components.

#### SENSORY TESTING

29. The emphasis of the subjective testing programme should move as soon as possible to the new challenges, e.g. sidestream and absolute product assessment. The DELTA work has largely achieved its aim, albeit that it is recognised that there will always be alternative approaches to the subject.
30. The need to have better methods to extend objective testing beyond O/WP still remains. Perhaps, the flavour research will provide useful pointers.

401099085

EXPANDED TOBACCO

31. The work on expanded flue-cured tobaccos (Project POET) should be completed and reported with urgency. The need for similar head-on comparisons of DIET and G-13 processing for blended tobaccos should be decided in the light of the findings on flue-cured tobaccos. The commercial options of the different expansion processes should be stated in both economic and product performance terms.
32. Both Arjay and Airco should be asked to provide evidence as to the biological activity of their respective forms of expanded tobacco. Pending this, a limited biological screening of smoke and/or condensate from expanded tobaccos may be required. (If U.S. blended tobaccos are to be tested, they should not relate to a commercial B. & W. product.)
33. Discussion of experiences with G-13 versus DIET revealed:
  - Reynolds does not have official federal clearance under either the Food or Environmental laws in any country; Berlin has merely given a waiver to set up a G-13 plant.
  - The move towards legislation on fluorocarbons in the U.S. continues.
  - The AGP recommendation is for 5 ppm maximum residue in the product.
  - In contrast to G-13, it is likely that in the U.S. royalties will, in the event, not be payable on DIET.
  - B. & W. concludes that, at large scale, there is little difference between G-13 and DIET in terms of capital cost, running cost and product performance.
34. The good performance to date of the Southampton 400 lb/hour DIET plant was noted. The need now is to evaluate performance under continuous operating conditions and to find ways of lowering the unit capital and running costs.
35. Following the ruling of the Board in November, no work was started on developing new expansion concepts or processes - other than to take steps to evaluate the Tamag claims re lamina expansion by ammonia and steam.

PRIMARY PROCESSING

36. Taken together, the GR&DC and Brazil programmes contain elements of what is required by the Group. The GR&DC work should concentrate on fundamental aspects of the effect of temperature, moisture and time on the changes in the chemical and physical properties of tobaccos - to provide the building blocks for subsequent developments, e.g. optimisation and commercial specification of future plants and/or modification of existing plants. (GR&DC should not be concerned with instrumenting specific commercial plants.)

401099086

37. The Brazil programme should aim at establishing process principles of potential relevance to other plants and other countries. The person(s) seconded from GR&DC to Brazil will provide both specific expertise and help maintain effective communications between the two programmes of work.
38. To support this practical research, there is a need to develop predictive models of the primary process. The models should cover both chemical (flavour) and physical (cell structure) aspects.
39. No work was started on the microbiological degradation of tobacco during storage - as anticipated at the last Research Conference. It should be considered for inclusion next year.
40. GR&DC should continue to monitor commercial developments elsewhere in the world (e.g. Tamag, RL, AMF microflake) and should also maintain a central awareness of the relevant activities of operating companies in the Group.

#### INSTRUMENTATION

41. Instruments and central systems to improve product quality and plant utilisation remain an important need, but future work should concentrate on fewer key areas. The Strategy 1 project provides an appropriate definition of priorities.

#### VENTILATION

42. The forthcoming Ventilation Conference should identify the gaps in technology and propose guidelines for future work. Additionally, there is an urgent requirement for a comprehensive assessment of currently available options (equipment, materials, product performance and costs) and GR&DC should take the lead in this work.

#### SECONDARY AUTOMATION

43. The secondary automation project (Strategy 1) is of central importance to the Group. The priorities being worked on offer the real possibility of giving BAT a lead over competition.

#### COMMUNICATIONS/SECURITY

44. The value of INTERBAT was confirmed. Further areas to be considered are:
  - (i) the inclusion of regular project progress updates from Southampton (and other research centres?),
  - (ii) the facility for blocking access to selection information if so desired by individual associates.

401099087

45. The proposed S&H Data Bank should be reviewed with the Marketing Department, Millbank, to ensure that it has the right of objectives and operating procedure.
46. The publication of scientific findings can aid staff satisfaction, and help to raise the credibility of BAT in the eyes of medical authorities, consumers, media, etc. but great care must be exercised for security reasons. A guideline might be:
  - (a) first obtain patent protection,
  - (b) then allow sufficient lead time to seek out a commercial advantage.
47. Both in the context of Strategy 1, and generally in areas of technology that have commercially sensitive implications, staff must be made aware of the need for security. This has implications also for the way manufacturers are permitted access to factories and research facilities, and also the way staff talk to outside persons.
48. Consideration should be given to establishing a regular competition monitoring survey to cover both technical and marketing actions and strategy.

#### PATENTS

49. The proposed new procedure for the effective communication and filing of patents was accepted - with the qualifications that the lists of "technology" countries should be looked at again.

#### REVIEW OF PROGRESS

50. A 3-4 day review meeting should be held at Southampton next May at which a number of the key technical areas of major interest to the CAC companies will be discussed by representatives currently working at the bench level. In future years the location of such meetings should rotate among the Research countries.

#### 1981 RESEARCH CONFERENCE

51. Consideration should be given to bringing the Conference forward (to August?) to allow more time for the decisions to be better incorporated in the draft programme required by the BAT Company Management Board in November.

L.C.F. BLACKMAN

2nd October 1980

401099088