A Guide to Deciphering the Internal Codes Used by the Tobacco Industry

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Abstract

Although previous research provides examples of the tobacco industry's internal codes, acronyms and abbreviations, no studies to date have undertaken a systematic review of this secretive internal jargon. In this study, we review tobacco industry documents to identify industry lists of codes and their definitions, types of codes, and patterns used for coding as well as specific codes related to product research. These findings are organized to assist other researchers in finding and decoding documents relevant to their own particular topics of interest. Likewise, we encourage document researchers to consider the use of code patterns, particularly those that are unique to specific manufacturers, departments, project areas or types of research. We conclude that effective document research requires the development of coherent strategies to identify and decipher the codes and terminology used internally and that sharing this information will facilitate and expedite future research.

Introduction

The recent public availability of millions of internal tobacco industry documents has provided the tobacco control community with an invaluable resource for assessing previously hidden industry knowledge and practices. Numerous published studies report new findings from industry documents (Cummings et al, 2002; Ling & Glantz, 2002; Muggli et al, 2003; Yach & Bettcher, 2000; Gunja et al, 2002; Hurt & Robertson, 1998; Connolly et al, 2000; Wayne & Connolly, 2002; Wayne and Connolly, 2004). These studies draw on internal codes to identify relevant projects, objectives, consumer targets, and other items of interest. Indeed, familiarity with the conventions (abbreviations, acronyms, industry jargon and the like) used internally by manufacturers is critical to successfully conducting and interpreting document research.

The codes provide a fascinating entry into the internal workings of the industry. Each code or project name provides a snapshot of a particular research goal, formulated and pursued at a particular period in time, with its own web of actions, successes or failures, and subsequent impacts. As part of a larger research project focusing on internal tobacco product research, we began to develop a list of codes and project names used internally by the industry in areas related to product research including product development, testing, design, and the like. This ongoing list is housed online at http://tobaccodocuments.org/profiles/.

No previous study has specifically sought to identify the extent and types of code languages used by the industry, or patterns governing these internal codes. To address this issue, we posed the following research questions:

1. Does the industry maintain formal lists of codes and their definitions, which would be useful to researchers seeking to decipher them?
2. What types of codes, and in which fields are codes generally used internally?

3. What codes relate to product research?
4. What formal or informal patterns are used for coding or naming internally?
5. Can a study of internal codes be used to target specific areas of interest and inform tobacco control research?

This study seeks to raise awareness regarding the extent and scope of codes used within the industry, and to provide a framework to assist other researchers conducting research of the internal documents. We report here some initial findings that demonstrate how codes can provide the key to opening new avenues for research, whether in areas related to product design or across other tobacco control disciplines.

Methods

Research was conducted through an analysis of internal industry documents accessed using the online interface at Tobacco Documents Online (http://www.tobaccodocuments.org), which houses approximately 6 million documents. The authors began by developing a list of internal codes and project names used by the industry in areas related to product research. Initial searches focused on identifying established industry lists of project names, abbreviations, acronyms and code languages used to categorize and describe work internally. Keywords used in searching included: glossary, index, definitions, terms, terminology, dictionary, abbreviations, acronyms, reference, and manual.

An initial list of over 5000 codes was compiled. Each code was identified according to type (e.g. project, brand, additive, design feature, marketing term), and the industry definition was recorded when available. These codes were then used as the basis for identifying formal patterns, for example, within types and manufacturers.

In most cases it was necessary to conduct further research within the internal documents to identify the use and meanings of specific codes. We focused this research on codes or terms that could be grouped into a series of categories (addiction, sensory perception, delivery mechanisms, smoking behavior, and harm reduction) highlighting areas of particular interest within the field of product design. The resulting codes and their expanded definitions are housed at http://tobaccodocuments.org/profiles. This paper presents approximately 185 codes, from the more than 1000 codes (as of 10/1/04) currently summarized on that site.

Although most of the definitions have been summarized with only a sentence or two, some have been expanded to allow greater depth of discussion. Wherever possible, we have attempted to highlight patterns in the industry's use of codes. These formal observations are intended to provide future document researchers with general rules or strategies that can be applied to their own investigations. Dates are given to approximate the timeline when a particular code name was used.

Results

Code lists

Many tobacco companies maintained lists of terms internally. Over a dozen Philip Morris (PM) documents are devoted solely to providing their personnel with guides to the company's extensive acronyms, abbreviations, codes, and terminology (Bailey & Debardeleben, 1993; PM, 1993; PM, 1993; PM, 1979; B&W, 1978). Brown & Williamson (B&W) adopted a Project Code System for assigning code names to projects that needed protection through confidentiality (Lewis, 1977). Other leading manufacturers have produced similar lists. A sample of these internal guides is given in Table 1.

Table 1. Sample of internal industry guides to codes/terms relating to product research and development			
Title	**Company/Year**	**# of Codes**	**Example of Code and Definition**
Brown and Williamson Tobacco Corporation Research, Development & Engineering Glossary/ Acronyms List (Lincoln, 1987)	B&W/1987	875	**LNB/WTS** – Low Nitrate Burley/Water Treated Stem
Brown and Williamson Tobacco Corporation Research & Development Project Code List (Hickman, 1993)	B&W/1993	316	**PROJ NO. 491** – Ammonia technology
Projects – 1984, 1985, 1986, 1987 (Lorillard (LOR), 1988 est.)	LOR/1988	76 per year	**B-439** – Menthol Application Process
Project Listing by Department (Lorillard, 1991)	LOR/1991	148	**B-465** – Additives for Reduced Sidestream Paper
List of Abbreviations/ Acronyms Appearing in Philip Morris (PM) R&D Reports and Memoranda (PM, 1987b est.)	PM/1987	471	**ATBL** – All Tobacco Blended Leaf
Abbreviations and Acronyms (Bailey & Debadeleben, 1993)	PM/1993	598	**AHP** – Alternate Humectants Program
Research & Development Definition File (RJR, 1984a)	RJ Reynolds (RJR)/1984	656	**Project Number 1601** – Unique Tobacco: domestic and offshore tobacco agricultural programs to provide unique or low biological activity tobaccos…
RJR Codes –Category Numeric (RJR, Oct 1984b)	RJR/1984	242	**Category 05** –FFLTNM 85; **Code 685** – Marlboro LT NM 85 (Box)
Acronyms (RJR, 1988)	RJR/1988	133	**ETP** – Engineered Tobacco Products

PM's Dictionary of Tobacco Terminology explains the value of internal code lists as follows: "Every specialized field has its own language. And most of these fields have dictionaries, handbooks, and encyclopedia that document, identify, or explain the uniqueness of their terminology" (Debardeleben, 1987). The PM Dictionary began as a compilation of answers to questions posed to the Philip Morris Research Center. This compilation was later updated annually and "…it will continue to be updated as tobacco terminology evolves and as new areas of research become relevant" (Debardeleben, 1987). It is important to note that internal lists

appear comprehensive, however, we are confident there are still many hundreds of terms and project names that they fail to cover.

Types of codes

Internal codes are used to refer to a range of subjects, including departments and projects, technical brand development and marketing terms, and specific product design features such as tobacco types, blends, additives, and formulas. Some common code types are highlighted below.

Projects

Internal research is commonly conducted within core projects with defined research objectives. For example, the industry initiated a number of projects "primarily defensive in nature" (PM, 1990) that sought to respond to criticisms and to the threat of regulation due to product health risks. These included:

- **Project B-451 (Cigarette Modification)** (LOR: 1995) tested the effects of cigarette design modifications including tobacco blends, additives and unique filter designs to reduce particular smoke components of mainstream smoke including carbonyls and catechol (Connolly et al, 2000).
- **Project Conqueror** (British American Tobacco (BAT): 1966) examined the inhibition of ciliary activity by smoke from various samples of cigarettes. Researchers concluded: "…it might be possible to vary the toxicity of the smoke by suitable manipulation and choice of the sections of dual and triple filter plugs" (Ayers, 1966).
- **Project Hart** (BAT: mid 1960s) put BAT in a position, if required, to produce cigarettes delivering lower amounts of tar with normal amounts of nicotine through the selection of tobaccos (King & Spalding, 1988).

- **Project Less (Low Sidestream)** (BAT: 1988-1992) aimed to develop a product with low sidestream yields and less visible emissions from the lit end of the cigarette (Case, 1992).
- **Project Lmasa (Low Mainstream Ames)** (BAT: late 80s) sought to establish blend/design options resulting in low toxicity (measured by Ames) (Baker, 1989).
- **Project PACT** (PM: late 80s-early 90s) represented an unusual approach to ETS: the development of state-of-the-art room ventilation systems (Sanders 1989; PM, 1990a).
- **PMT Project (Putrescine Methyl Transferase)** (PM: 1988-1998) utilized molecular biological techniques to develop a plant in which the gene for synthesis of PMT (an essential enzyme for the biosynthesis of nicotine and nornicotine) would not be operative resulting in a plant with considerably decreased TSNA (Sanders, 1989).
- **Project RIO** (B&W: 1983-1996) assessed relationships between combustion, smoke delivery and biological activity "in an attempt to provide a sound basis for the design of low biologically active cigarettes" (B&W 1983).
- **Project SRBA (Substantially Reduced Biological Activity)** (B&W: 1960s-80s) aimed to develop cigarettes where epidemiology would show no greater incidence of disease for smokers than non-smokers (King & Spalding, 1988).

Additives

Internal discussion of additives is a maze of codes and symbols. The following table is just a small A-Z sample of the terms used internally for flavor additives and related projects.

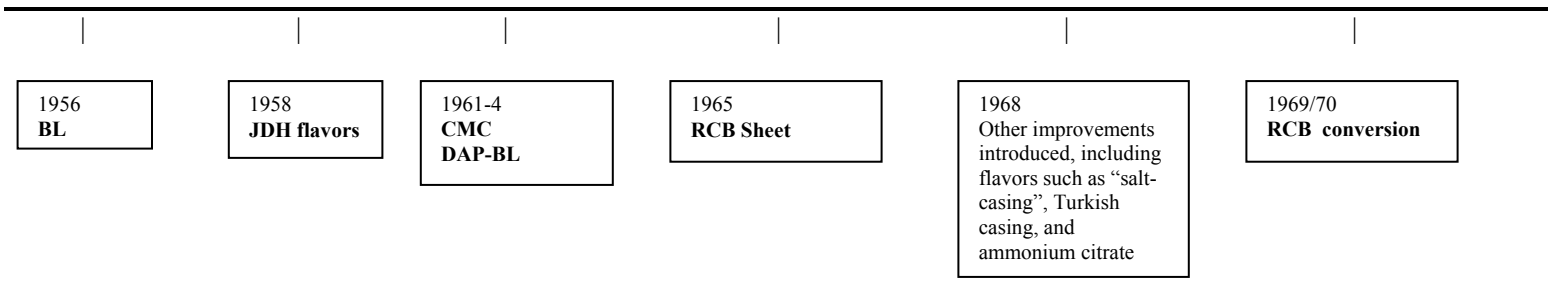
Table 2. Alphabet Soup: An A-Z of Tobacco Additives		
Additive Code	**Company: Dates**	**Definition**
AMSPIN	B&W: 1978-1994	A formulation for spray-dried licorice, (Chakraborty, 1986) typically contrasted with BJSDLE (contrasted with BJSDLE below).
BJSDLE	B&W: mid 1980s – mid 1990s	Block Juice Spray Dried Licorice Extract (Chakraborty, 1986)
CLIFFO, **CELPOR**, **CARVAN**, and **CALSIS**	B&W: early 1980s – mid 1990s	All code names for chocolate (Tinsley, 1989)
DBA (Direct By Products Additions)	RJR: early 1980s – mid 1990s	"Direct addition of stem and scrap to cigarettes" (Smith, 1992)
EMERGE	B&W: late 1980s - early 1990s	A tobacco casing made from ammonium salts of malic, citric and phosphoric acids, developed as a source for ammonia following the banning of diammonium phosphate in Germany (Aulbach, 1991)
F-1	RJR: 1970-mid 1990s	Cocoa/chocolate (Dube et al, 1984)
GILWAY **GALWAY**	B&W: mid 1970s-1990 B&W: mid 1980s	Ammoniated Glycyrrhizin (Thompson, 1900) Synthetic Menthol (Thompson, 1900 1995)
HGE/RTF (Hot glycerine extracted~reacted tobacco flavorants)	RJR: early 1990s	Tobacco continuously extracted with hot glycerin. During extraction, amino acids (aspartic acid, alanine and asparagine) added to facilitate Maillard reactions. (RJR, 1992a)
IMPOLLOS **ISA**	B&W: 1930s – 1980s PM: 1980s – 1990s	Lactic Acid (85% USP) (Thompson, 1900) Isoamyl Acetate (Ellis et al, 1987)
JH	PM: 1973-1998	Juvenile Hormone added to stored tobacco to kill the cigarette beetle by inhibiting the development of the beetle into adulthood (Lehman et al, 1977)
KINTOLLY **KUPTIE**	B&W: 1960s – 1990s B&W: 1980s	Natural 1-menthol (Thompson, 1900) Crème de Cocoa (Thompson, 1900)
LOWFAR	B&W: late 1970s – 1980s	Linalyl Acetate (Thompson, 1900)
MATILE	B&W: late 1970s – 1980s	Oil of Mace (Thompson, 1900)
NTF (Natural Tobacco Flavor)	RJR: 1990s	An extraction of Turkish tobacco demonstrating "significant impact on smoking quality" (Smith, 1992)
O-150	RJR: late 1980s - early 1990s	Levulinic acid. Discovered to have a number of useful properties (Keithly et al., *in press*), including raising the

		delivered nicotine in smoke, reducing the inherent harshness of nicotine, and increasing binding of nicotine to receptors in the brain (Buckner & Hsu, 1990)
PM Flavor 15319	PM: 1993	Celery Seed Oil (PM, 1993)
QUINEX	B&W: 1990	Fritzche Oil of Clary Sage (extra) (Thompson, 1900)
RN-75-07-0 **RN-58-08-2**	PM: mid 1990s PM: mid 1990s	Acetaldehyde (Goldsmith, 1994) Caffeine (Goldsmith, 1994)
SYNTHOS **S8**	B&W: 1960s-1990 PM: 1990s	Coumarin (Thompson, 1900) Theobromine (Goldsmith, 1994)
TBF (Tobacco based flavors)	RJR: 1990-1997	Made from water extracts of G7 or C-dust, spray-dried, and mixed with asparagine and water (RJR, 1992a)
UTRILO	B&W: 1974 – mid 1980s	Firmenich Imitation Raisin (Thompson, 1900)
VALLEY	B&W: 1990s	2-Methoxy-4-methylphenone **(**Thompson, 1900)
WIMPEY	B&W: mid 1980s	Maltol (3-hydroxy-2-methyl-4-pyrene) (Thompson, 1900)
XFF-121	B&W: mid – late 1970s	Modified synthetic menthol (Broeker, 1977)
YEPO	PM: late 1970s – early 1990s	Yeast Encapsulated Peppermint Oil (Bailey & Debardeleben, 1993)
ZARONA	B&W: mid 1980s – 1990	Manheimer Birsch Tar, rectified (Thompson, 1900)

Tobacco blends, processes, and formulas

Internal codes provide insight into the additive formulas, technologies, and design features used in development of brands. For example, following the trail of codes associated with Marlboro development provides a picture of its historical progression through a number of critical processing and flavoring changes, which improved taste and mildness of the cigarette while simultaneously delivering nicotine more effectively. Figure 1 provides a timeline of the earliest critical PM processing discoveries, and a brief description of each term is provided below.

Figure 1. The Marlboro Recipe, Part I:
A Timeline of PM's Breakthrough in Tobacco Processing

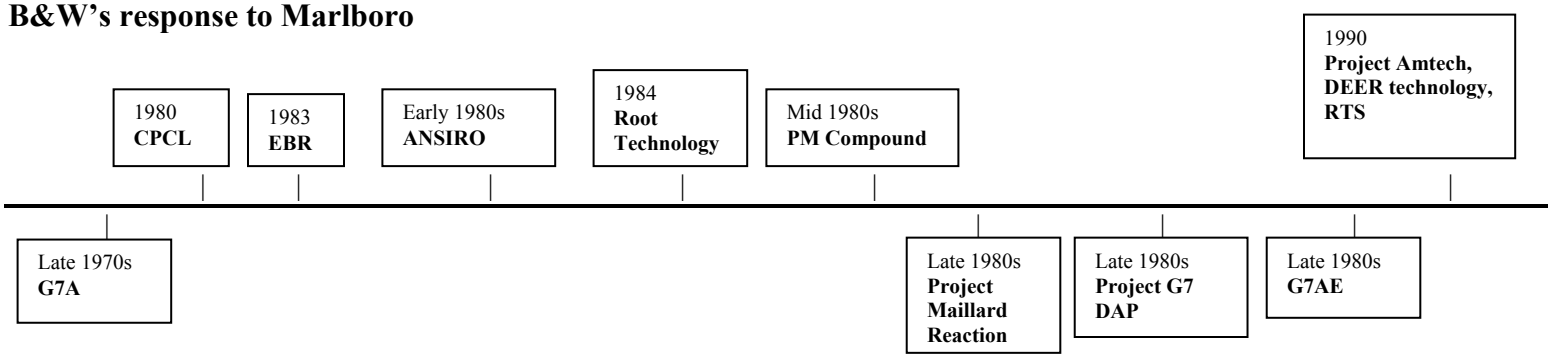


- **BL** (Blended Leaf) tobacco sheet, which increased perceptions of smoothness, sweetness, and mildness when added to Marlboro ("a new and different flavor") (Hind & Burnett, 1966).
- **JDH flavors** (developed by JD Hind) increased the mildness of smoke (Seligman et al, 1958).
- **CMC** (Carboxymethyl cellulose), was used to bind reconstituted tobacco together. Eventually replaced by **DAP** (diammonium phosphate), which released pectins in tobacco and "self-binds" BL; the **DAP-BL** was milder, but had manufacturing problems (Guthrie & Wilkinson, 1964; Leik, 1967).
- A patent for **RCB (Reconstituted blend)** was filed in 1966. Philip Morris then began **RCB Conversion** and by 1970 RCB accounted for the entire reconstituted portion of the Marlboro blend (Daylor et al, 1983).

Subsequent additions and changes to the Marlboro recipe took place in the years following RCB conversion. In the mid-1970s, under **Project 2305 (Flavor Acceptability)**, Philip Morris began targeting the development of reaction flavors in a new processed tobacco called **Reconstituted Leaf (RL)** (Houck & Lilly, 1988). Internal research demonstrated that chemical reaction products created by combining sugar and ammonia (or sugar and an amino acid) produced a smoothing effect on RL (Sanders, 1977). By 1981, **cooked flavors** were commonly used as an ingredient in RL blends (Debardeleben & Rosenberg, 1987). Cooked flavors replaced earlier flavor formulations of the late 1970s including **150B** (Vilcins et al, 1981).

Meanwhile, B&W and RJR struggled for many years to develop products to compete against PM's Marlboro. Figure 2 provides a corresponding timeline, based on internal codes, for some of the strategies used by B&W and RJR.

Figure 2. The Marlboro Recipe, Part II:
Marlboro and Its Imitators



- **CPCL** was a reconstituted tobacco sheet (**RTS**) formulated to compete against RCB, demonstrating unusually high nicotine transfer efficiencies (Wells, 1995; Aulbach et al, 1991).
- **EBR** (**extracted burley reconstituted**), a paper based RTS, was used in combination with CPCL and contained DAP and reducing sugars (Wells, 1995).
- **ANSIRO** was a casing which combined ammonia with a banana extract (Wells, 1995).
- **Root Technology** (RT) – "forcing" ammonia chemistry through the combination of sugar, ammonia and DAP (Wells, 1995).
- **PM Compound** encompassed a series of projects which sought to identify the formula used in PM sheet (RJR, 1985c).
- **DEER** was a new ammoniated RTS explored under **Project AMTECH** (Brown & Jenkins, 1900a).
- **G7A** was an ammoniated tobacco sheet developed in response to Marlboro (RJR, 1991b).
- **Project Maillard Reaction** defined key chemical reactions involved in ammoniation (RJR, 1989b).
- **Project G7 DAP** sought to evaluate whether DAP could be used to improve the taste of G7A (RJR, 1989b).
- **G7AE** differed from G7A in that ammonia was applied to the G7 extract prior to making the reconstituted sheet rather than ammoniated after cutting (Gignac et al, 1988).

Patterns among codes

Some coding systems followed an explicit set of rules, while others utilized more informal or apparently arbitrary patterns.

Formal coding systems

Projects, departments, and divisions were frequently identified according to a numerical classification scheme or system. For example, PM used number series to code projects. In the 1960s major PM research projects were categorized in hundred (00) series, such as **Project 1300 (Blended Leaf Improvement)** (Hind, 1961), **Project 1500 (Low Tar Filler)**, and **Project 1600**, which focused on the psychological and psychophysiological aspects of smoking a cigarette (Dunn 1970). Follow-up projects or offshoots of these projects were commonly identified by sub-series. For example, important offshoots of Project 1600 included:

- **Project 1610 (Behavioral Pharmacology)** (1983), which housed research regarding acetaldehyde, nicotine-brain behavior interactions and nicotine-receptor behavior interactions (Denoble, 1983).
- **Project 1620 (Electrophysiological Studies)** (1992-1998) sought to develop methods by which to reliably evaluate human responses to cigarettes, smoke constituents and tobacco flavorants, and to apply these methods to flavor issues of importance to the company (Hayes, 1994 est; Hayes, 1993).

Sub-series which were identified by changes in the ones column tended to be more focused or limited in scope. Examples included **Project 1382 (Nicotine Transfer in Smoke**) (1979) (PM, 1968), **Projects 1502** and **1503 (Modified Smoking Materials Research)** (1965-1972 & 1968-1989, respectively) (PM, 1987a est.), and **Project 1608 (Smoke Condensate Studies)** (1986), which examined antioxidants as agents for the reduction of tobacco specific nitrosamines in mainstream cigarette smoke (Haut et al, 1986).

A similar numeric system was likewise used to categorize BW research programs in the 1990s. Each major "work area" was identified and numbered on an annual basis. Examples from 1992

included **921.01 – Smoke Quality Improvement**, **921.02 – Total Smoke Reduction and Control**, **921.03 – Tar Modification**, **921.04 – New Materials and Products**, **and 921.05 – Chemosensory and Analytical Chemistry** (B&W, 1992). These work areas were broken further into projects, also organized numerically, i.e.: **921.05.100 (Impact and Irritation)**, **921.05.200 (Aftertaste)**, **921.05.300 (Mouthful of Smoke), 921.05.400 (Chemosensory Effects due to Smoking Behavior)**, **921.05.500 (Chemosensory Effects due to ROOT Technology)** (Baker, 1992).

Formal code systems do not only apply to projects and departments. RJR established a formal coding system for categorizing their flavoring codes (RJR, 1900a) as well as their processed tobaccos. RJR utilized these codes "to insure confidentiality and eliminate descriptive names which may give clues about the process modification" (Sohn, 1989).

RJR Flavoring Codes: (RJR, 1900a)

- TF-Nos: experimental top dressings
- T-Nos: final dressing concentrations
- F-Nos: alcohol applied final top dressings
- S-Nos: propylene glycol applied final top dressings
- SM-Nos: propylene glycol applied menthol final top dressings
- E-Nos: filter flavors
- F-Nos: experimental filter flavors

At Lorillard, additives were assigned a code according to the "B" list (B1-B171), (Lorillard, No date) which included for example:

- B2: Alcohol – specifically denatured (190 proof)
- B6: Artificial coumarin 2134
- B37: Artificial Marshmallow
- B45: Raisin Concentrate
- B47: Rum special denatured (150 proof)
- B71: Anethole
- B91: Deer tongue

Figure 3. Item Identification Codes for G-Processed Tobaccos at RJR (Sohn, 1989)

G__-nnL = base for item id. Code
- G__ is a number for the process
- Nn is a number for a specific version
- L is a letter for a modification

G7, G16, and G17 series codes refer to reconstituted tobacco processes while G13, G14 and G18 refer to expanded tobacco processes. G15 series refers to pectin release cast sheets.

Examples:

G7-10B	1.2% DAP Treated G7-1 Sheet
G13-23	Freon Expanded Cut Filler
G14-1	Expanded Cut Roll Stems
G15-2	Pectin release Cast Sheet (100% Dust Recipe)
G16-2	Lowest Nicotine Tobacco Sheet
G17-1	Reconstituted Tobacco Strands (RTS)
G18-1	Propane Expanded Process (PEP)

Less formal patterns used for internal codes

Companies frequently assigned an informal name for regular internal reference, either in addition to or in place of more formal systems. In the excerpt presented in Table 3 below, PM listed both a "DM code" and a "PM description" to refer to additives. The DM Code is numerical while it appears that the PM Description frequently consists of "witty" terms or phrases used to simplify chemical compounds.

Table 3. Excerpt from Philip Morris List of DM (Direct Material) Codes – 4/27/93 (PM, 1994 est)
[01-,02-,03- all single flavors, chemicals, botanicals and 04-,70- purchased compound flavors]

DM Code	PM Description	Compound
02-110	PETREO	Chocolate
03-100	Casing 70	Propylene Glycol
01-807	DANDY	Dandelion root extract
03-479	DIAMOND	2,5-Dimethylprazine
03-871	LAND	Alpha-phellandrene
04-106	LUKE	Compound flavor formulation
70-026	Sour	Dill Oil

A common pattern—used very consistently at RJR but also to a lesser extent by other companies—was to simply use an acronym for the project title. The examples presented below are all taken from projects seeking to increase the sensation of "smoothness".

- **Project ATF (All Tobacco Filter)** (RJR: 1985-1990) (RJR, 1986c)
- **Project STT (Smooth Tobacco Taste)** (RJR: 1987-1993) (Faggert, 1990)
- **Project SHIP (Smoke Harshness Improvement Project)** (B&W: 1983-1991) (B&W, 1985)
- **SETD (Smoothness Enhanced Top Dressing)** (RJR: early 1990s) (Burger, 1992; Smith et al, 1992)
- **Project LLM (Low Level Menthol)** (RJR: late 1980s) (Willard, 1987)
- **Project SS (Super Smooth)** (RJR: 1986-1995) (Scism, 1992)

Observed similarities across code names sometimes proved significant. For example, RJR conducted a series of projects relating to their efforts to compete against PM's Marlboro brand. Each code name was two letters, the first always being an "M" for Marlboro:

- **Project MC** (Camel) (RJR: 1973-1990) identified new product opportunities for Camel that "provide leverage points of difference versus Marlboro and which provide the ultimate in rich tobacco taste with the smooth delivery preferred by younger adult smokers" (RJR, 1990).
- **Project MP** (RJR: 1984-1993) aimed to penetrate Marlboro's business base with unique cigarette propositions that appealed directly to identified smoker niches within Marlboro's younger adult franchise (RJR, 1985a).
- **Project MS** (RJR: 1983-1988) worked to provide incremental share/volume for RJR by complementing the company's existing presence within the savings segment with a brand family targeted against younger adult smokers (RJR, 1986d; Verner, 1986).

- **Project MO** (RJR: 1981-1985) sought to replace Newport as the most relevant menthol brand for younger adult smokers (RJR, 1985a).

Catchy names and clever patterns

Some coding patterns appear to have been assigned for no more obvious reason than convenience. For example, B&W used signs of the zodiac (no Project Cancer, however) to label internal survey projects designed to research the "mindset" among current smokers, never smokers and ex-smokers. Results of such surveys provided the basis for products targeted at smoker groups and characteristics (demographic, psychographic, physiological, or personality-based) of those groups (Cook et al, 2003; Ling & Glantz, 2002).

- **Project Aries** (early 1980s) focused on what disturbed respondents most about other people's smoking, significance of passive smoking, and what "type" of people feel strongly about smoking issues (Oldman, 1981; RJR, 1982).
- **Project Aquarius** (1978-1992) included in its topics: the role of government in curbing smoking, responsibility of cigarette manufacturers, awareness of anti-smoking bodies, and restrictions on one's right to smoke (King & Spalding 1988; Oldman, 1981).
- **Project Capricorn** (1984-1993) aimed to reduce sidestream smoke visibility; the smell of ambient smoke, on the hands, on clothes and on hair, the butt smell in the ashtray; and the annoyance to smokers and nonsmokers in closed spaces or in places with low air exchange rates (RJR, 1993).
- **Project Gemini's** (1979-1996) aimed to develop regular and menthol low tar products that offered unique dual filter technology (B&W, 1984b).
- **Project Libra** (late 70s) sought to examine the relationships between cigarette smoking, health attitudes and dissonance (Weaver, 1981).

- **Project Taurus** (1982-1985) sought to develop a product that addressed growing social concern over environmental tobacco smoke (ETS) concentrating on low visible sidestream papers (Zolper, 1985).
- **Project Virgo** (1979-1982) aimed to identify the perceived benefits and disadvantages of smoking (King & Spalding, 1988).

An unusual pattern of PM identified projects (predominantly from the late eighties and early nineties) with names of rivers around the world. There did not appear to be an obvious topical link among the projects. Names included: **Amazon (Pestlin, 1989), Colorado (PM, 1976), Danube (Fatton, 1988; Amati et al, 1989), Euphrate (Abdelgawad et al, 1988), Mississippi (Abdelgawad et al, 1988), Nile (Fatton, 1990), Thames (Fatton 1990), Tibre (Abdelgawad et al, 1988), Venoge (PM, 1987b), Volga (PM, 1991a)**, and **Zambezi (Abdelgawad et al, 1988).**

Philip Morris used the Greek alphabet to identify internal projects relating to the development of new cigarette technologies (sometimes referred to internally as "the Grecian Formulae"), for example:

- **Project Alpha -** To utilize the Superlights trademark as the vehicle for the launch of PM's first 1 mg identified product (PM, 1991)
- **Project Beta** - To develop a battery powered cigarette (Sanders, 1989)
- **Project Delta -** To "apply principles of low delivery cigarette technology, combustion physics and tobacco chemistry to the development of non-conventional smoking articles; specifically in the area of ultra-low or controlled composition tar delivery." Project Delta was the precursor to Premier (Lanzillotti, 1980; PM, 1987)

- **Project Gamma -** To develop a product to compete with the introduction of an Eclipse type smoking article (Nichols, 1996)
- **Project Sigma -** To develop a novel article with a chemical heat source (PM, 1991)

Using codes to identify areas of particular research interest

Codes provide a critical entry into identifying internal research discussions within the industry documents. Outlined below are some examples that highlight many of the patterns already described above and demonstrate their potential value for conducting document-based research.

Addiction

Research was conducted to identify codes relating to internal projects and technologies that intended to alter delivery of nicotine, increase the levels of nicotine in tobacco, or alter smoke chemistry to enhance its addictive effects. Examples included:

- **Aries filter** (B&W: early 1980s), a plastic mouthpiece that achieved tar reduction by ventilation without filtration, providing unfiltered smoke at low-tar deliveries (Johnson 1984; Jeffreys & Singer, 1992). As observed internally: "Aries smoke chemistry differs because it provides nicotine enrichment in later puffs" (Jeffreys & Singer, 1992; Riehl, 1994). This product was later refined under **Project Gemini** (PM, 1994).
- **Project B412 - Nicotine Manipulation, Migration & Reaction Mechanisms** (LOR: 1976-1986) The object of this project was to increase nicotine to tar ratios in mainstream smoke. (Sudholt, 1983; Ireland, 1981) Techniques included use of additives such as malic acid on the filter (LOR, 1984).
- **Project LODOS** (RJR: mid 1980s) findings revealed "that nicotine can be specifically and differentially removed from the smoke aerosol delivery", indicating that "development of

products yielding high nicotine uptake relative to particulate [tar] retention is feasible" (Read, 1984).

- The **Nicotine Augmentation Project** (LOR: mid 1970s) and **CONAP (Continuation of Nicotine Augmentation Project)** (LOR: late 1970s) described a wide range of possible techniques for "delivering a level of nicotine higher than could be obtained normally by conventional cigarette construction" (Minnemeyer, 1976).
- **REST (Re-Establishment of Solubles to Tobacco)** (RJR: late 1980s) A process by which an aqueous extract of tobacco was ammoniated and the nicotine was removed by liquid extraction. Adding known amounts of recovered nicotine back to the extract could then control nicotine concentration in the tobacco (Steele, 1991).

Delivery mechanisms

We identified codes used to describe technologies that allow varying degrees of control over smoke deliveries. On one end of this spectrum were cigarettes that allow the consumer to decide with each cigarette (or even during smoking of the cigarette) what level of tar, nicotine or menthol they wish to consume. Examples included:

- **Project AF (Adjustable Filter)** (RJR: 1982-1989) The project targeted young, entry level smokers. (Bultman, 1985) Researchers noted: "Such a cigarette would enable smokers to compensate for greater or reduced strength requirements at either the beginning or the end of the day, during particularly stressful situations, for relaxation purposes, in instances where cigarette smoking was combined with drinking, dancing or eating, etc." (Kaufman, 1983).
- **Project Data (Dial-a-tar)** (PM: 1982-1993), a cigarette (marketed as Concord) that could be adjusted by twisting the filter to vary the amount of tar inhaled by the smoker (Bultman,

1985). **DAMP** (PM: 1983) was a related "**dial-a-menthol product**" which allowed the smoker to switch from regular to menthol (PM, 1983).

- **Project Panther** (PM: mid 1980s), which was premised on the belief that "people want to be in control of their lives and bodies." The goal was to let the smoker set a cigarette's taste/strength according to his or her own needs, allowing "lots of taste in the morning" while it "lets you tone it down in the afternoon" (PM, 1986).
- **Project SMITH** (BAT: 1983/85), which sought to achieve a high taste to tar ratio by designing products which responded very positively to changes in human smoking behavior, resulting in the highly controversial Barclay cigarette. Similar projects were initiated by other manufacturers in response to Barclay, including PM's **Project Grow (grooved acetate filter)** (PM: 1970-1998) (PM, 1982; Seligman, 1980) and RJR's **Project MBF (multi-balance filter)** (RJR: early 1990s) (RJR, 1991a).

On the other end of the spectrum were cigarettes that dramatically altered or controlled the cigarette's pattern of delivery.

- **CODEVAC (Constant Density Variable Composition)** (B&W: 1971-1985) was an in-house B&W machine that made "longitudinally structured" (i.e. different blends at the front and back end) cigarettes. (Radley, 1983) A similar project at RJR was termed **TSB (Two-Stage Blend)** (RJR, 1986a; RJR, 1985d).
- **CP (Controlled Profile)** (PM: 1966-1975) Hypothesized that the smoker would be satisfied by a cigarette that delivered "full-bodied" puffs in the first part of the cigarette; thereafter the smoke would become more air-diluted resulting in lowered "tar" and nicotine delivery for the rest of the cigarette (Tamol, 1967).

- **Project EPPCAT** (RJR: 1982-1995) used filter technology to provide greater than usual smoke delivery in early puffs yield and decreased delivery in later puffs (RJR, 1992b).
- **Project FELT** (B&W: 1984-1990) "…this project aims at maximizing the taste and flavor from the first third of the cigarette using initially only conventional design technology" (B&W, 1984a).
- **Project PPP** (PM: mid-late 1980s) Control of "**puff-per-puff**" delivery profiles, seeking to improve the ratio of first to last puffs by adjustment of filter efficiency, RTD, density, and porosity (Singer, 1984).

Smoking behaviors

Industry studies carefully examined the smoker and his/her relationship with the cigarette. We identified a number of highly complicated, large-scale behavioral studies that had been conducted by the industry focusing on measures such as compensation and the role of specific product characteristics in controlling smoker behavior. These included:

- **Project DFC (Desire for Cigarette)** (RJR: 1985/86) (RJR, 1986b)
- **DELTA methodology** (B&W: 1983/84) assessed smoking dynamics: "the sensations experienced by a smoker during puffing, which seem to play [a] large part in determining the acceptability of low and ultra-low delivery cigarettes" (Ayres & Greig, 1984).
- **HIPPO projects** (RJR: 1960s- 1990s) "test[ed] specific hypotheses about the mechanism(s) of action of nicotine on several functions of the body…" (B&W, 1900).
- **Puma** (BAT: late 80s-early 90s) examined nicotine dose on consumer smoking style/behavior (Brown & Jenkins, 1900b).

- **RFE (Reward For Effort)** (BAT), that is, how much smoke (or a given constituent of smoke) is available to the smoker for a given effort (puff volume, duration, etc.) (British American Tobacco, No date).
- **SEX I-III** (**Smoke exposure studies**) (PM: 1968-1972) compared smoking behavior in 1972 with 1968 (Duggins et al, 1973).
- **Sonar** (BAT: 1985) aimed to monitor the way consumers actually smoke cigarettes (puffing behavior) to achieve deliveries of tar/nicotine (RJR, 1985b).

Reduced harm and novel products

We looked at coded industry research efforts targeting harm reduction products. These were frequently long-term and highly funded efforts that spanned across decades and were housed within a complex array of independent projects.

- **Project Airbus** (B&W: 1988-1994) developed and evaluated alternatives to RJR's Premier (B&W, 1900).
- **Project ART** (PM: 1982-1987) addressed "interest expressed by consumers in full flavor products with substantially reduced nicotine levels" (PM, 1992). Plans were to market "to the consumer in such a way to convince them that they are indeed receiving a product which would be perceived as 'safer'" (PM, 1987a).
- **Project Beta-90** (RJR: 1987-1994) proposed to develop a cigarette which approaches the MS/SS chemical and biological advantages of Premier but has the ritual, taste, satisfaction, manufacturability and financial margins of conventional FFLT products (RJR, 1989a).
- **Project Day** (BAT: 1987-1989) conceived in 1987 to consider potential safer alternatives to conventional cigarettes (RJR, 1900b).

- **Project LN (Low Nicotine)** (RJR: 1983-1994) intended to develop cigarettes having the lowest level of nicotine available (Singer, 1984).
- **Project NI** (**no inhale**) (RJR: 1987/88) assessed the appeal of a product designed not to be inhaled (RJR, 1987).
- **Project NN** (**no nicotine**) (RJR: 1988-1994) set out to develop a product utilizing the Premier configuration which would deliver virtually no nicotine to the smoker (RJR, 1989a).
- **Project Omega** (RJR: 1988-1993) examined the development of an energy source for a flavor/aerosol delivery system that could be smoked in a restricted area (RJR, 1989a).
- **Project XDU** (RJR: 1991-1997) focused on new product development which minimizes lit end smoke and biological activity and simplifies mainstream smoke chemistry. There were two types of XDU – tobacco burning and tobacco heating (Summers, 1992).

Discussion

A systematic review of the internal language used within the industry documents is useful because it allows for more purposeful and directed searches. Tobacco document researchers frequently rely on a "snowball" sampling method as a means to dig more deeply into a particular area of research. This method involves conducting successive searches that follow directly from previous search results. Internal codes are a primary target for the "snowball" method. Thus, effective document research requires the development of coherent strategies to identify and decipher the codes and terminology used internally.

This paper presents a number of patterns identified through an analysis of thousands of codes from a segment of internal documents related specifically to product design. The tobacco companies in this sample used a variety of different types of codes both formal and informal,

ranging from acronyms to "catchy" names, (and?) from numerical coding and letter patterning to signs of the zodiac and the names of world rivers. In some cases the patterns linked a series of concepts or projects with related content; in other cases they were linked by year or proximity within a department; and in still other cases the link across a particular pattern of codes was accidental or not evident at all.

Document researchers are encouraged when conducting their own research to consider the use of code patterns, particularly those that are unique to specific manufacturers, departments, project areas, or types of research. For example, familiarity with internal conventions regarding use of acronyms facilitates complementary searches ("ATF" for All Tobacco Filter). Recognizing that RJR's brand development projects designed to compete with Marlboro were coded with two initials, the first always being "M", provides new criteria for a subsequent series of searches. Likewise, a researcher interested in examining the use of chocolate/cocoa as a cigarette additive will need to consider the very different conventions used by different manufacturers to identify the additive internally. While a single code ("C-1") is commonly used by RJR, B&W used numerous code names—all apparently beginning with C, however, which would be a good place to start.

We believe the findings from this study are applicable across the industry documents. However, our sample was by no means comprehensive—we estimate that overall the internal documents contain many tens of thousands of code terms. Our findings demonstrated that the industry maintains dictionaries and handbooks of codes internally, which provide definitions useful to assist researchers in deciphering codes and may help to direct new research. Having access to the industry's codebooks, like understanding the code patterns outlined above, can assist future research efforts. There are many more codes, however, than are captured in any one or many of these lists.

It is imperative not only that tobacco control researchers continue to decipher and make use of the industry's internal code language, but that we share this information to facilitate and expedite future research. Encountering codes without definitions, timeframes, and explicit meaning makes the task of research at times very daunting, like trying to learn a foreign language without an instructor or reference dictionary. Although resources to pool such data are currently limited, one available option is the list of Profile terms maintained at Tobacco Documents Online (TDO), found at www.tobaccodocuments.org/profiles/. The authors have posted all of the codes they have encountered to date, with definitions and links to relevant documents, at this site, and encourage other document researchers to do so as well.

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