

PRODUCT DEVELOPMENT &  
SPECIFICATIONS DEPARTMENT

402413038

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Project Title: RAM (T-3174)

Objective : To design a product delivering 4 mg of tar to be targeted against Rothmans "Craven A Special Mild" (Tar level 5.0 mg, 0.5 mg Nicotine) in terms of taste level and smoking satisfaction.

Given Specifications:

Length : 84 mm  
Circumference : 25 mm  
Filter Length : 20 mm  
Tipping Length: 30 mm  
Pressure Drop : as necessary to provide best draw -  
mouthful of smoke combination.  
Perforations : visible.

Approach : Following our experience with Medallion cigarettes (1 mg Tar) it was decided to test only Malaucene Macro Laser tipping in combination with Schweitzer 912 Superpore Plugwrap (260 R1).

All practical combinations of filter pressure drop and paper porosity were tested and the tar levels adjusted by the use of appropriate ventilated tippings.

All initial samples were prepared using our most flavourful Virginia strip blend (JPS) in combination with WTS.

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All samples delivering target yields were evaluated by our Expert Smoking Panel with reference to smoking mechanics (combination of ease of draw and mouthful of smoke).

Having chosen the optimum combination of paper, filter P.D. and tipping to give best smoking mechanics we proceeded to new blend developments to optimize taste.

Development : Twelve (12) samples, all delivering approximately 4 mg of tar were prepared using 24, 44 and 87 Coresta citrate papers, 3.1", 3.85" and 4.5" pressure drop filters (20 mm tip) in combination with Malaucene 1 x M 1.5,0.0 and 1 x M 2.0,0.0 tippings.

The 12 samples had the following specifications:

<u>Sample No.</u>	<u>Filter P.D.</u>	<u>Tipping</u>	<u>Porosity (Coresta)</u>
534	3.1 "	1 x M1.5	44
140	3.1 "	1 x M2.0	44
272	3.1 "	1 x M1.5	87
609	3.1 "	1 x M2.0	87
496	3.85"	1 x M1.5	24
038	3.85"	1 x M2.0	24
014	3.85"	1 x M1.5	44
535	3.85"	1 x M1.5	87
378	3.85"	1 x M2.0	87
564	4.5 "	1 x M1.5	24
198	4.5 "	1 x M1.5	44
759	4.5 "	1 x M1.5	87

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Expert Panel Evaluations resulted in the selection of Sample No. 534 which had been manufactured with 44 Coresta citrate paper, 1 x M1.5,0.0 tipping with a tip pressure drop of 3.1". Density of the tobacco portion was .266 gm/cc and the perforations were located 12.5 mm from the mouth end. Selection was made on the basis of best draw and optimum mouthful of smoke. In the opinion of the Expert Panel the sample cigarette, although having slightly less taste than Craven A Special Mild was considered to have a significantly better taste and a better mouthful of smoke.

A further 4 recipe modifications were tested in the same format as Sample No. 534 but none achieved as well balanced a smoke as the original JPS-WTS combination.

The opinions of the Expert Panel were verified by the results of a consumer test which showed 52% of the panel of 361 smokers preferred the Project Ram cigarette; 29% preferred Craven A Special Mild; 19% expressed no preference.

In transferring this cigarette from the Product Development Center to our manufacturing facilities, the tar deliveries were found to exceed the target of 4 mg by 1.3 mg in our

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Guelph plant and 2.6 mg in our Quebec Plant.  
Production in the Quebec Plant was halted while the situation in Guelph was corrected by the use of 1 x M2.0,0.0 tipping and a widening of the glue free slot from 4 mm to 7 mm. The brand was launched in the market place as *Matinée Extra Mild K.S.* in May/78 and to date has achieved 1% share of market.

Package Numbers: 4 mg tar, 0.4 mg nicotine (CO content  
2. 5.9 gm/cigarette).

Final Brand Specifications:

Finished Weight (cg)	105.30
Tobacco Density (cg/cc)	26.45*
Tobacco Recipe	JPS/WTS-A
% Ventilation	60
<u>COMPONENTS &amp; DIMENSIONS</u>	
Overall Dim. (mm)	84 x 25
Cigt. Paper Type	#510 (44 Coresta Citrate)
Cigt. Paper Size (mm)	64 x 27
Filter Length (mm)	20
Tipping Type (Malaucene)	1 x 2.0,0.0 Aquafuge BNG 933
Tipping Size (mm)	30 x 27
Width of Glue Free Area	7 mm
<u>FILTER ROD SPECIFICATIONS</u>	
Tow	2.1/45,000
Supplier	Can. Celanese
% Pz	5 (Triacetin)
Dimensions (mm)	120 x 24.50** (24.85 mm actual)
P.D. (inches)	18.0
Weight (gm/100 rods)	83.0 (Tentative)
Plugwrap	Schweitzer 912 Superpore (260 R1)

\* Tobacco at 14.5% Moisture Content  
\*\* As measured on a Filtrona gauge.

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Project Title: SUN K.S. (T-3172-1)

Objective : To design a product to fill the 7 mg market segment for the purpose of attracting smokers who were on the way down the numbers scale from mid T & N level brands, and also for those smokers looking for more satisfaction than the current low segment and new 'special lights' at the 5 mg tar level could supply (Viscount K.S., Craven A Special Mild K.S.).

Given Specifications:

Length : 84 mm  
Circumference : 25 mm  
Filter Length : 20 mm  
Tipping Length: 24 mm  
Pressure Drop : as necessary to provide best draw -  
mouthful of smoke combination.  
Perforations : non-visible if possible.  
Subjective  
Emphasis : To have relatively high taste level with  
little irritation.

Approach : As this cigarette was being developed concurrently with Project Ram it was decided to use Schweitzer 912 Superpore Plugwrap (260 R1) in combination with Malaucene Micro Laser perforated tippings to satisfy the request for reduced visibility of the means of ventilation and allow micro perforations to control smoke dilution.

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All samples, initially, were prepared using our high taste JPS recipe incorporating WTS at .266 gm/cc density.

Combinations of filter pressure drop, paper porosities and perforated tippings were examined to achieve the required 40% ventilation for 'on-target' tar and nicotine levels (7 mg and 0.7 mg).

All candidates meeting these deliveries were examined subjectively by the Expert Panel for selection of the best smoking mechanics.

Development: Ten (10) samples were prepared using 44 and 87 Coresta citrate papers with 3.85", 3.0", 2.55" and 2.15" pressure drop filters (20 mm tip) with Malaucene 4 x M0.15,4.5, 4 x M03,3.5, 2 x 0.15,4.5 and 2 x M0.3,3.5 tippings. Of these only two samples satisfied the Marketing Specification for smoke deliveries. These were (1) #668, a sample using a 2.55" pressure drop filter 2 x M0.3,3.5 tipping and 87 Coresta citrate paper yielding a tar level of 6.8 mg and <sup>(2)</sup>sample 018, a cigarette with a higher filter pressure drop of 3.85" and a less ventilated tipping, 2 x M0,15.4.5 and 87 Coresta citrate paper yielding 6.8 mg.

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The Expert Panel chose sample 668 as being significantly more acceptable in terms of smoking mechanics. Taste quantity and quality were acceptable exceeding those of the 5 mg market segment.

Additional recipes were submitted by Leaf Blending in an attempt to match taste level and acceptability at a lower blend cost. Two of these (224A & C) were judged by the Expert Panel to meet these requirements. The Panels comments of these and the JPS/WTS sample were as follows:

- 1) JPS/WTS had a good flue-cured taste quality with high notes: a good taste level for a 7 mg cigarette and was smooth, clean and mellow.
- 2) LB224A was as acceptable as the JPS/WTS sample. It had some sharpness and impact, was a clean smoke, similar to JPS/WTS in taste level and quality, but slightly fuller.
- 3) LB224C had a flatter, blander taste character and was slightly woody; although fuller than JPS/WTS it was judged to be less full than Recipe 224A. Taste level was similar to JPS/WTS. This recipe was considered to be the least smooth of the samples.

All 3 samples were submitted to a consumer test.

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Consumer test results indicated that recipes 224A and C were equally acceptable while JPS/WTS was significantly inferior. The blander recipe (224C) performed better among low T & N smokers than 224A and was the blend chosen for the brand.

No difficulties were experienced in transferring the production of this cigarette to the manufacturing plant.

The brand was launched as Peter Jackson Extra Light K.S. in October/78 and has reached .48% share of market to November/78.

Final Brand Specifications:

Package Numbers: 7 mg tar, 0.7 mg nicotine (CO level 7.5 mg)

Finished Weight (cg)	105.20
Tobacco Density (gm/cc)	.266*
Tobacco Recipe	224C (C-05)
% Ventilation	40
<u>COMPONENTS &amp; DIMENSIONS</u>	
Overall Dimensions	84 x 25
Cigarette Paper Type	W-100 (87 Coresta Citrate)
Cigarette Paper Size	64 x 27
Filter Length (mm)	20
Tipping Type	2 x MO,3.3.5 Malaucene Aquafuge BNG 933
Tipping Size (mm)	24 x 27
<u>FILTER ROD SPECIFICATIONS</u>	
Tow	3.3/44,000
Supplier	Can. Celanese
% Pz	6½ (Triacetin)
Dimensions (mm)	120 x 24.65** (24.85 actual)
P.D. (inches)	15.3
Weight gm/100 rods	85.5
Plugwrap	Schweitzer 912 Superpore 260 R1

\* Tobacco at 14.5% moisture content

\*\* As measured on a Filtrona gauge.

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Project Title: Sun Regular (T-3172-2)

Objective : The objective for this cigarette was the same as for the King Size and with equivalent target tar and nicotine levels (7 mg and 0.7 mg).

Given Specifications:

Length : 72 mm  
Circumference : 25 mm  
Filter Length : 20 mm  
Tipping Length: 24 mm  
Pressure Drop : as necessary to provide best draw -  
mouthful of smoke combination.  
Perforations : non-visible if possible  
Subjective  
Emphasis : To have a high taste level, but with more  
impact than the King Size Sun cigarette -  
more towards the Player's family character.

Approach : The parallel development of this brand with the King Size version allowed us to examine immediately the alternate recipes developed for the Sun K.S. together with our 'control' tobacco (JPS/WTS).

Development : The tobacco rods of King Size cigarettes were reduced in length to 52 mm and an additional sample using Player's Filter tobacco was made.

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<u>Sample No.</u>	<u>Filter P.D.</u>	<u>Tipping</u>	<u>Paper Porosity</u>	<u>Tar</u>
439-LB224C	2.55"	2xMO,3.3.5	87.5	6.9
097-LB224A	2.55"	2xMO,3.3.5	44	6.9
668-JPS/WTS	2.55"	2xMO,3.3.5	87.5	6.4
424-P. Filter	2.55"	2xMO,3.3.5	87.5	6.8

The four samples were submitted to the Expert Panel. One sample (224C) was rejected as having a flat and woody taste character, the other three were submitted for consumer testing with the following ranking:

LB229A - fullest smoke with least pleasant taste character.

LB224A - less full smoke with most pleasant taste character and sharp note. (Rated the best 'light' of recommended samples).

JPS/WTS - Thinnest smoke with least taste, but smoothest.

The results of the consumer test indicated a marginal percentage preference, 42 vs 38, for JPS recipe over Player's Filter with no preference between 224A and Player's Filter. On this basis JPS/WTS was adopted as the blend recipe.

No manufacturing problems were encountered in transferring this cigarette to the plants. The brand was launched nationally as Peter Jackson Extra Light Regular in October/78 after being tried in a test market. Share of market achieved

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during October-November was 0.16%.

Finished Weight (cg)	88.90
Tobacco Density (gm/cc)	.266*
Tobacco Recipe	JPS/WTS
% Ventilation	40
<u>COMPONENTS &amp; DIMENSIONS</u>	
Overall Dimensions (mm)	72 x 25
Cigarette Paper Type	44 Coresta citrate
Cigarette Paper Size	52 x 27
Filter Length (mm)	20
Tipping Type	2 x M0,3.3.5 Malaucene Aquafuge BNG 933
Tipping Size	24 x 27
<u>FILTER ROD SPECIFICATIONS</u>	
Tow	3.3/44,000
Supplier	Can. Celanese
% Pz	6½ (Triacetin)
Dimensions (mm)	120 x 24.65 ** (24.85 actual)
P.D. (inches)	15.3
Weight gm/100 rods	85.5
Plugwrap	Schweitzer 912 Superpore 260 R1

It is interesting to note, that, for the tobacco portions reduced in length by 18%, smoke yields are very similar to K.S. lengths when tipping combinations, tobacco butt and % ventilation remain constant.

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Project Title: Expert Panel Training

Objective : To train additional Expert Panels

Approach : Early in 1978 it became apparent that our Expert Panel was overloaded and was incapable of handling the number of projects required by Marketing. It was therefore decided to recruit and train new panel members from within Head Office. A new Psychologist was hired to carry out this task and currently 12 staff members selected on the basis of preliminary screening tests are being trained.

In order to be able to train these smokers an expert panel training manual had to be written to insure that all panelists would be trained in an equal and standard way and also to supply a reference work for the person in charge of the training.

The scope of this manual is quite extensive, leading the trainee from basic appreciation of the functions of an expert panel and the complexity of the smoking experience of cigarettes through detailed training in our main subjective categories (mechanics, strength, taste). This is accomplished by means of lectures, exercises and examples.

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A fairly broad cross-section of smoking experience with various types of tobacco and cigarette brands (ITL and Opposition) is included in the training in order to widen the discriminatory base of the panelists.

The aim of the training and the manual is to make the trainees fully aware of the various sensations available in the cigarette smoke and to lead them towards being able to describe the smoking profile of a cigarette in a reproducible way and in words which have the same meaning to everyone on the panel(s).

The training manual was distributed to various members of the BAT group in January 1979 in the hope that it would prove useful in setting up similar panels elsewhere.

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