

PHILATELIC RESEARCH & SECURITY PRINTING MONOGRAPH

Paper and Paper Suppliers of India’s 10th and 11th Definitive Series

A Technical Study of Builders of Modern India (2005–2009) and Makers of India (2015 onwards)

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RESEARCH SYNOPSIS & THESIS

Modern Indian definitive stamps printed at the **India Security Press (ISP), Nashik Road** represent sophisticated security substrates rather than ordinary commercial paper. This monograph by **Vijay Navlakha** presents breakthrough documentary evidence—including tender records and customs import logs—demonstrating multi-source procurement from the UK (**M/s Tullis Russell Coaters Ltd.**) and **Indonesia**, establishing the physical substrate mechanism behind observed shade variations.

1. Introduction & The 2015 ISP Tender Breakthrough

The most significant discovery relates to the paper used for the **11th Definitive Series** (*Makers of India*, 2015 onwards). ISP Nashik issued **Global PQB No. 40/PQB/NCB/2015-16**, dated **26 May 2015**, calling for approximately **600 MT (±1%)** of:

“Sensitised Differences All Over Ashoka Pillar Watermarked Supercalendered Security Paper with invisible fibre”

Crucially, ISP mandated that the primary manufacturer disclose its actual manufacturing plant and that the manufacturer itself—not merely an Indian commercial agent—meet strict technical standards.

MANDATED SPECIFICATION	TECHNICAL / MANUFACTURING PROCESS	SECURITY & PHILATELIC SIGNIFICANCE
Dandy-Roll Watermark	Continuous all-over Ashoka Pillar watermark	Embedded directly in the wet slurry web during paper formation; refutes any notion that these series were "unwatermarked."
Security Fibres	Embedded synthetic & invisible fluorescent fibres	Fluoresces under filtered UV light to enable anti-counterfeiting verification.
Supercalendered Surface	Multi-roll high-pressure calendering cylinders	Compresses surface fibers to ensure extreme smoothness and controlled ink hold-out.
Format & Gumming	Reel form production with specialised gumming	Supplied pre-gummed for high-speed automated rotary gravure/offset stamp printing.
Rigorous Protocols	Controlled manufacturing & security protocols	Strict chain of custody, mill batch inspections, and security clearance.

2. Documented Import Evidence: Tullis Russell & Indonesia (2015–2016)

Independent customs and import records show that the **Security Printing & Minting Corporation of India Ltd. (SPMCIL) / ISP** imported large quantities of Ashoka Pillar watermarked, gummed, and supercalendered security paper from **M/s Tullis Russell Coaters Ltd. (United Kingdom)** in 2015, overlapping precisely with the preparation and introduction of the 11th Series.

Documented 2015 UK Imports (Tullis Russell) 16 January 2015: 149,956 kg 02 April 2015: 95,898 kg 27 May 2015: 87,196 kg 02 June 2015: 12,509 kg (Totaling over 345 metric tonnes in early 2015)	Documented 2016 Multi-Source Imports Indonesia Shipments: 21 Apr 2016: 29,873 kg & 14,904 kg 28 Aug 2016: 40,486 kg UK Subsequent Shipments: - May–June 2016: 35,230 kg, 70,431 kg, and 105,339 kg
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TULLIS RUSSELL AS PRIME CANDIDATE

Tullis Russell Coaters Ltd. stands as the **strongest documented candidate** for the main paper supplier for the 11th Definitive Series at its inception. However, philatelic rigor requires noting that until specific ISP purchase orders or mill certificates are correlated to individual print runs, we must avoid asserting that *all* 11th-Series stamps were produced exclusively on Tullis Russell paper.

3. The Tripartite Supply Chain Structure

Current procurement documents reveal that security paper supply is not always a single-mill operation. The chain frequently involves three distinct specialized entities:

1. Paper Manufacturer

Produces the raw base security paper web and controls fiber composition and pulp brightness.

2. Dandy-Roll Maker

Engineers the specialized wire cylinder embedding the precise Ashoka Pillar watermark design.

3. Gumming / Coating Facility

Applies water-activated gum, sensitised coatings, and conducts supercalendering finishing.

ISP tender rules mandate notification of changes at any stage and reserve strict inspection rights for all involved facilities. Thus, a "paper supplier" may refer to the prime contractor, coating facility (e.g., Tullis Russell Coaters), or importing agent.

4. The 10th Series (2005–2009) & Historical Context

For the **10th Definitive Series** (*Builders of Modern India*, 2005–2009), accessible ISP purchase orders or award notices conclusively identifying the paper mill remain undiscovered. Therefore, claiming that *"The 10th Series was supplied by Tullis Russell"* is not yet supported by direct documentary proof.

However, deep historical precedents connect Tullis Russell to Indian security printing:

- **1975 Catalogued Precedent:** Indian stamps from 1975 are catalogued on *Tullis Russell CQ Quality Stamp paper (102 GSM)* with the Ashoka Pillar watermark.
- **Judicial Records:** Indian judicial documentation confirms a long-standing pattern of ISP purchasing Ashoka-watermarked base paper that was subsequently gummed and supercalendered by Tullis Russell.
- **Domestic Mill SPM Narmadapuram:** While Security Paper Mill, Narmadapuram possesses full security paper capability, no open tender records verify them as the exclusive definitive supplier for these specific series.

5. Physical Substrate Mechanics Behind Shade Variations

The extensive shade varieties encountered in modern Indian definitives cannot be dismissed as simple press ink inconsistencies. **Supercalendering**—passing paper through alternating heated steel and compliant rolls under immense pressure—creates an ultra-smooth, dense surface. Any fluctuation across batches produces perceptible optical shifts:

SUBSTRATE FACTOR	BATCH-TO-BATCH VARIANCE MECHANISM	VISUAL / COLOR EFFECT ON PRINTED STAMP
Surface Calendering & Gloss	Differential roll pressure alters micro-roughness and specular reflectance.	Higher gloss yields deeper, more saturated, and vibrant color tones.
Ink Absorption & Hold-Out	Variations in sizing and surface porosity govern ink vehicle penetration.	High hold-out keeps pigments on top; high absorption dulls and diffuses color density.
Optical Brightness & Opacity	Variations in base pulp bleaching and optical brightening agents (OBAs).	Causes identical printing ink to appear distinctly warmer, cooler, lighter, or darker.
Moisture Content & Caliper	Equilibrium relative humidity shifts affect wetting tension and drying rates.	Leads to micro-dot gain variances and perceived tonal shifts across printings.

6. Evidentiary Framework & Research Discipline

EVIDENCE LEVEL	PHILATELIC STATEMENT / PARAMETER	DOCUMENTARY STATUS
DOCUMENTED	ISP Tender No. 40/PQB/NCB/2015-16 for 600 MT Ashoka watermarked supercalendered paper.	Officially published ISP tender specification (26 May 2015).
DOCUMENTED	Import of >345 tonnes from Tullis Russell (UK) in 2015 & imports from Indonesia in 2016.	Confirmed via SPMCIL/ISP customs shipment manifests.
PROBABLE		

EVIDENCE LEVEL	PHILATELIC STATEMENT / PARAMETER	DOCUMENTARY STATUS
	Tullis Russell supplied the primary launch paper for the 11th Series.	Strongest documented candidate; awaiting specific PO-to-cylinder matches.
UNPROVEN	A single uniform GSM (e.g. 80, 90, or 100 GSM) applies to all 2015–16 printings.	2015 PQB omits GSM; later tenders specify 80 GSM reels, but cannot be back-dated.
UNPROVEN	The 10th Series paper was supplied exclusively by Tullis Russell or SPM Narmadapuram.	No direct 2004–2009 contract awards publicly accessible to confirm mill allocation.

7. Conclusion & The "Paper Genealogy" Project

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Shade variations in modern Indian definitives are a direct physical consequence of multi-source substrate procurement (UK, Indonesia, and domestic channels). The ultimate objective of modern Indian philatelic research must be the creation of a comprehensive **"Paper Genealogy"**.

By mapping each definitive stamp printing, cylinder number, and release date against documented ISP tenders, customs shipment logs, mill certificates, and non-destructive laboratory tests (such as UV fluorescence, micrometer thickness gauging, and spectrophotometric color analysis), philatelists can transform isolated shade observations into a rigorous, scientifically validated philatelic taxonomy.