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AUSTRALIA'S COUNTERFEITING EXPERIENCE

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I would like to thank the ICPO - Interpol General Secretariat for providing the Reserve Bank of Australia with the opportunity to address this Congress to talk about Australia's counterfeiting experience.

As many would know, especially those who attended the Helsinki '97 Counterfeiting Conference, all of our banknotes in Australia are now produced using a polymer substrate called Guardian®, supplied by Securency Pty Limited. This sees Australia as the first country in the world with all of its banknotes on polymer rather than the traditional rag based paper substrate. But other countries are catching on fast, with our printing works, Note Printing Australia Ltd, now having filled or in the process of filling export orders for polymer notes to ten other countries. In addition, press-ready Guardian® polymer is being actively trialled at a growing number of print works in many other countries throughout Europe, Asia and the Americas.

In discussing Australia's counterfeiting experience, it is appropriate to firstly consider the reasons why Australia decided to change to polymer in the first place. The genesis of this dates from a long time ago, 1966 in fact. In that year, Australia moved to a new series of paper banknotes which included what was then considered state of the art security features. However, the worst fears of an issuer were soon realised when, within the first 12 months of this new series of paper notes being issued, high quality counterfeits of the $10 denomination were produced and widely circulated. Not surprisingly, the confidence of the Bank in existing banknote technology was severely shaken. So much so, that the Bank took the view that traditional banknote technology had a limited useful life and the problems could only get worse with further advances in reprographic techniques which were then on the horizon.

The Bank's response to this experience was to look for radically new security devices which could be applied to banknotes to give the position of strength back to the

issuing and note printing authorities. Many different devices were looked at, but the potential of optically variable devices (OVDs) was identified in the early 1970s. Many different types of OVDs were developed and experimented with, but the one most effort went into finally was the class of OVDs called diffraction gratings. With the focus on OVDs, interest moved to substrates made from laminates of clear synthetic polymeric materials, as these were considered a more suitable carrier for such devices given their greater stability and smoother surface characteristics.

Once work on such substrates started, it was quickly realised that they offered many additional security and other advantages just not possible with paper. Immediately obvious was the ability to opacify most of the note with print while leaving a portion clear. This meant that devices like OVDs would be seen from both sides of the note, and the surrounding transparent area could be an important security feature in its own right. Also, the substrate could be permanently embossed and, if done in the clear window, could create a further unique security feature. Laminates were also experimented with as they seemed to offer the potential to incorporate features inside the note such as OVDs and threads. In the event, laminates were discarded as they tended to delaminate during durability tests. Many other features were developed to trial stage.

Thus, the primary purpose for developing polymer note technology was to enhance the security of notes against counterfeiting. And following the encouraging results from a field trial of the new technology in 1988, at which time we released a commemorative $10 polymer note, the Bank decided to release a new series of notes using the new polymer technology. The first of these, a $5 note, we released in July 1992 and the last, a $100 note, we released in May 1996.

So what has been our experience with counterfeits since the introduction of our polymer banknotes? In short, we have see a significant reduction in counterfeiting activity. However, before outlining to you our counterfeiting experience in some

detail, I want to first give you a brief insight into why our polymer provides a security advantage over paper substrate now, and in the long run.

As I have said, the primary purpose for developing polymer note technology was to enhance security. We do not fool ourselves into thinking that polymer will *totally* eliminate counterfeiting. Indeed, we have never said this. Rather, the advantages we see arising from polymer notes in the fight against counterfeiting are:

- making it more difficult, time-consuming and costly to counterfeit by increasing the range and complexity of skills and steps required;
- making it easier to recognise a counterfeit;
- providing a platform for new and varied security features which can be introduced when needed (and which are not possible with traditional paper substrate).

What became more obvious during the development stage of polymer notes was an increase in the level of counterfeiting. This reflected the following:

- rapid improvements in print technology in the public arena particularly in regard to colour photocopiers;
- the increased availability of colour photocopiers, as they became cheaper and easier to use; and
- the lower level of skills required to use publicly available scanning devices, computers and colour printers.

In this environment, it was overwhelmingly clear that there was a need to increase substantially the effort to keep ahead of counterfeiters. In particular, there was an increasing need to eliminate as much as possible the opportunities for the casual counterfeiter to produce fake notes.

Polymer substrate offers considerable advantages in these areas, and there is no doubt in our minds that polymer notes are just as relevant for other note issuers, printers and law enforcement agencies around the world. It is interesting to now see paper suppliers trying to incorporate some polymer features into paper. To us, these attempts to imitate polymer notes and their unique features are really a form of flattery to us. They indicate that the security advantages, of the clear window feature for example, are now well recognised. The patent literature shows efforts to put clear windows into paper substrate, or to create them through laminates of paper and polymer.

Paper-based substrate technology is very old, with advancements generally occurring only at the margin. It has served its purpose well, but is now well and truly showing its age. The future of security for paper notes is reduced to add-ons. However, there are limits to the effectiveness of add-ons on paper because the surface is rough, the fibres fracture, and there can be chemical attack from the paper itself. Graphic arts materials which simulate foils, thin films and other OVDs (including OVI) are becoming increasingly available commercially. For such features to be effective as counterfeit deterrents, it will be necessary to use them in more imaginative ways in the future than we have seen so far. Also, while some countries have taken the approach of putting one of everything into their notes, we take the view that such notes become too complex for the person in the street. It is only with polymer notes and the new **self-authenticating banknote concept**, which I'll say more about in a few moments, that the issuer and printer can fully integrate the substrate, the print and add-ons.

For us, all of this indicates the importance for note issuers and printers to look for new and novel features. A paradigm shift is needed for issuers and printers - one has already occurred for the counterfeiter. A new technology which has started its evolutionary life is more relevant because it will present a formidable array of new and costly challenges to the counterfeiter over the long term.

Of course, a change such as we have made is a very major change to make, involving bold decisions and a certain amount of risk taking. But these things are needed if we are to stay ahead of the counterfeiter. If we fail to stay ahead, the consequences are fairly horrendous. At the extreme, should the day ever come when the person in the street cannot easily tell a counterfeit from the real thing, the use of cash can be expected to decline sharply, and we will stand a very good chance of achieving a cashless society by default.

Importantly, polymer notes offer a long term future because they will accommodate new and varied security devices which will just not be possible with paper notes. In Australia, we have not had to use the full range of security features possible with polymer so far, as the use of the simple transparent window (with printing and embossing within it), in conjunction with "normal" printed security features, have done a very effective job for us.

As the same printing processes are used for paper and polymer banknotes, all security features printed on paper can also be applied onto polymer. These include intaglio, offset and letterpress printing for features such as tonal portraits, latent images, micro-printing, intricate background patterns, see-through registration, visible or invisible fluorescent or phosphorescent features, and the use of "metallic", metameric or metachromic inks. The polymer substrate is also an excellent surface for the application of optically variable ink (OVI), as it enhances its colour shift characteristics. The watermark and machine readable thread features of paper notes also have their full equivalent in polymer notes.

I mentioned earlier that what the world has seen of polymer notes so far is only the beginning of what can be done with the technology. What else is coming?

Part of the future of polymer notes lies in realising that the clear window, as well as being a security feature in its own right, can act as a tool to be used with other

features in the note to produce unique effects. To illustrate this, let me give you a few simple examples that our research people have developed:

1. The clear window, or part of it, or one of a number of windows that could be in a note, can be made into a lens to form a magnifier or to unscramble scrambled indicia. I know that the microprint on notes of many countries is very small. How much use is it? Who carries a magnifying glass in their pocket? But if the note had its own magnifying glass built into it, microprint as a security feature becomes a whole different story.

2. The clear window can form a colour filter to really make use of the security potential of metameric inks. Many countries use metameric inks, but they are not understood, and the effect created by, say photocopying a note, can be so subtle as to go unnoticed. Again, the picture changes dramatically if the note has its own special filter built in which is optimised to the metameric inks being used.

3. The clear window and the thickness of the substrate can be combined with printed images to create moiré effects that generate dynamic images. Imagine a moiré designed to create a moving denominational numeral.

What we are creating is in effect a sophisticated, but simple to use, "self-authenticating" banknote.

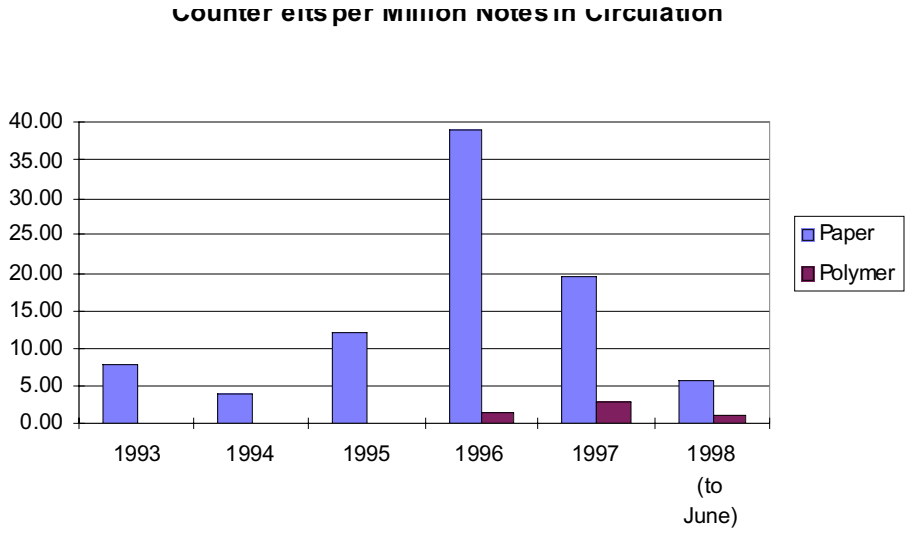
These are just a few examples whereby effects unique to polymer, and not possible with paper, can be created. They add dramatically to the time required, cost and difficulty a counterfeiter must face in reproducing them. But, more importantly, they bring to the person in the street access to easy methods of authentication which previously would have required an extra device such as a magnifying glass, a lens, or an alternative optical source.

But let's leave the future for another day and turn our attention now to a closer examination of Australia's actual counterfeiting experience.

As I mentioned earlier, Australia introduced its new polymer banknote series over the period July 1992 to May 1996. While we were confident that the threat of counterfeiting could be reduced significantly with the use of polymer banknotes instead of traditional rag-based paper notes, we were also aware that counterfeiting would continue at some level, possibly involving poor quality counterfeits. The hard facts are now starting to emerge:

- our counterfeiting statistics are now heading downwards at a rapid rate;
- in particular, polymer notes appear to have stopped the "casual" or the "crime of opportunity" counterfeiter totally.

This graph shows counterfeits per million notes in circulation each year since 1993. It is only since 1996 that the split between counterfeits of the paper note series and the polymer notes series is relevant. (The number of counterfeits represents a very small percentage of the 526 million notes on issue in Australia.)



The big rise in counterfeiting around 1996 was focused on the old paper note series, mainly $50s and $100s. It reflected, among other things, easy access to colour

photocopiers and scanning devices, requiring little technical skill to operate. Following the move to polymer for these denominations, counterfeits of the old paper series have fallen sharply.

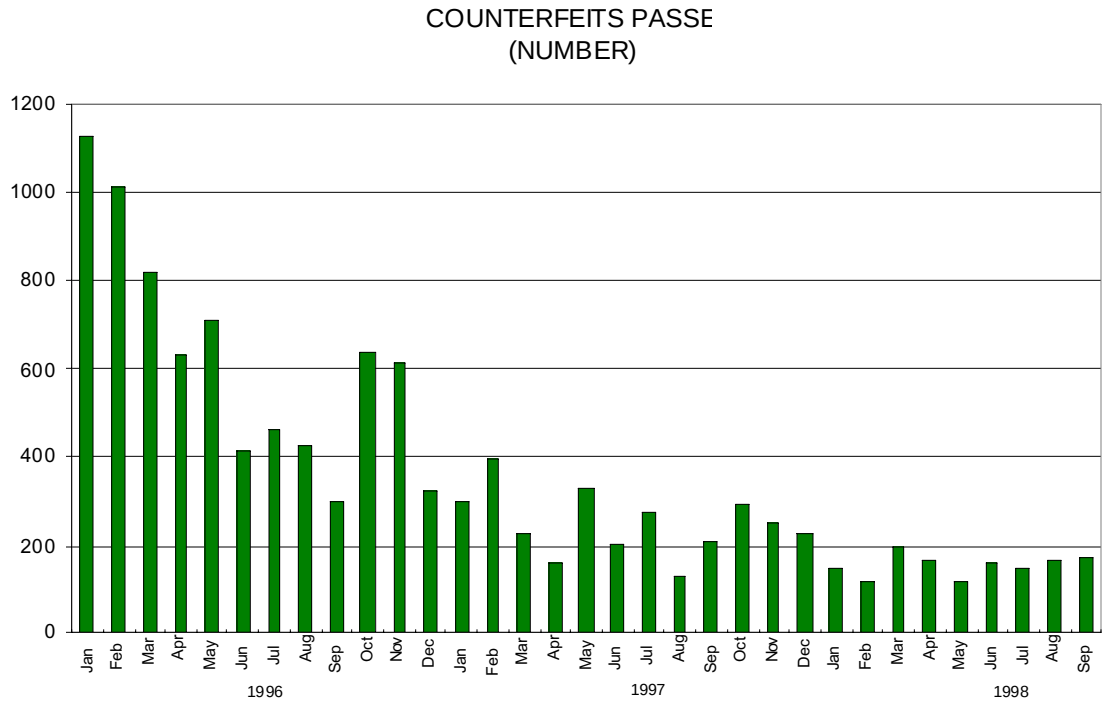
Despite the Bank introducing the first polymer note of the new note series in July 1992, it is worth noting that counterfeits of the polymer note series did not surface until some 4_ years later, and then only in very small numbers. The first of these was a fairly crude version of the polymer $50 note. Initially, all counterfeits were produced on a paper substrate and were very crude. In many instances, there was no clear window or, if there was one, it was the result of cutting out a hole in the paper substrate and crudely sticking a piece of plastic onto the note to cover the hole. Such counterfeits were easily detected both by the appearance of the window and by feel, including running one's finger across this area of the note. In many of these counterfeits, the stuck on piece of plastic was peeling or had fallen off.

It was not until February last year that the first counterfeit using a plastic substrate material in an attempt to simulate our own appeared. This counterfeit was of the $20 note. More recently, a small number of $100 note counterfeits have also appeared. Despite having a reasonably good reproduction of the printed features, these counterfeits were again easily detected:

- the thickness and feel were noticeably different from an authentic note;
- when crumpled, they made a distinctly different sound because of the different substrate being used;
- there was no embossing or only a crude embossing of the denomination in the clear window;
- the transparent window lacked clarity.

The message is loud and clear: even with the most basic of polymer security features, Australia's counterfeiting rate has declined significantly as illustrated in the next graph.

This is the mind picture I want you take away today. In particular, you can see that the level of counterfeiting is now at a very low level indeed. Well under 200 a month now, with most of these still being counterfeits of the old paper series.



The reduced level of counterfeiting is a very positive result for polymer and we believe that opportunities for the "casual" or "crime of opportunity" counterfeiter have been virtually eliminated. The main threat is now limited largely to the professional counterfeiter. I mentioned earlier some examples of advanced security features that have been developed for use in polymer notes which will greatly assist efforts, when needed, to continue to make counterfeiting of polymer notes very difficult.

Before concluding, I would like to share with you a couple of interesting twists to the successes we have achieved with our polymer notes. Firstly, the greater security and

durability of polymer notes means that they do not need to be checked as often for authenticity and wear and tear. This has allowed the Reserve Bank to significantly reduce the volume of notes it processes each year through its CVCS high speed note sorting machines, resulting in significant cost savings.

Secondly, not only has the introduction of polymer led to a much lower level of counterfeiting, it has also meant that fewer police resources are required for investigating counterfeiting matters.

In a sense, we see that this has the potential to create something of a paradox. On the one hand, as the issuer of our currency, we are, of course, very happy that there are fewer counterfeiting instances for our policing authorities to investigate, following the release of the polymer note series. But on the other, we consider it remains necessary for an appropriate level of policing services and resources to be readily on hand to control any counterfeiting episodes which arise, especially ones involving high-quality counterfeits.

I believe the point I am making here has general application. And that is, where a country experiences only erratic and infrequent occurrences of significant counterfeiting episodes, the policing authorities need to be flexible in applying the necessary quality resources to counterfeiting investigations when offences do occur, even though there may be less counterfeiting crime overall. In the absence of such an approach, issuers could become concerned that less than adequate policing resources would be available when needed. Indeed, over time, counterfeiting could become a "soft crime" which ultimately would put at risk the integrity of the particular country's currency. None of us, of course, would ever wish to see such a situation eventuate.

So, while note issuers are now able to achieve much reduced incidences of counterfeiting by changing their banknotes to polymer and employing the "new age" security features available, the importance of a well-resourced police service being

available when needed to assist in the fight against counterfeiters cannot be under-estimated.

Thank you for your attention.