

# Engineering News

## Agreement Reached on Provisional Practice for Setup in the Interconnection of NTSC and Component Systems

Agreement has been reached by the Joint Ad-Hoc Group to Study Component Studio Implementation on the requirements for a Recommended Practice describing techniques to be used in mixed NTSC/component facilities.

The announcement was made by the Chairman of the parent Working Groups to which the Joint Ad-Hoc Group reports, Merrill Weiss (Chairman, Working Group on Component Analog Video Standards) and Stan Baron (Chairman, Working Group on Digital Video Standards).

The group prepared a document which calls for the preparation of a Recommended Practice and describes the principles upon which that Recommended Practice should be based. The Working Groups accepted the recommendation of the Joint Ad-Hoc Study Group and requested that the Ad-Hoc Group prepare a draft Recommended Practice for their consideration on an urgent basis.

Merrill Weiss pointed out that reaching agreement on how to handle setup in a mixed component/NTSC system now makes it possible to move forward with extensive component capabilities in existing NTSC systems. Stan Baron observed that setup was recognized, early on, as an issue which had to be addressed in both the CCIR 601 compatible digital and analog component systems when they are used in conjunction with NTSC Systems.

The text of the document adopted by the Joint Ad-Hoc Group and accepted by the two Working Groups follows.

### **Recommendation: Setup in the Interconnection of NTSC and Component Systems**

The Joint Ad-Hoc Group to Study Component Studio Implementation,

#### *Considering:*

- For over thirty years, the NTSC system has operated with a nominal setup of 7.5%, with an allowable range of  $\pm 2.5\%$ .
- Over this same 30-year period, live studio cameras and telecines have provided *RGB* component outputs with zero setup.
- In 1982, the CCIR and SMPTE adopted worldwide a set of digital component signals for the studio based on *Y*, *B-Y*, and *R-Y* having zero setup.
- In 1985, SMPTE has drafted standards for sets of parallel and serial analog component signals based upon *Y*, *B-Y*, and *R-Y* which are fully compatible with the digital component signals previously adopted and which have zero setup.
- In 1985, in proposed HDTV standards based upon *Y*, *B-Y*, and *R-Y* components which have zero setup,

compatibility is being sought with the digital component signals previously adopted.

#### *Noting:*

As the several digital and analog component systems are incorporated into facilities, portions of which continue to operate in NTSC, it will be necessary for the component portions and the NTSC portions of such mixed component/NTSC facilities to be interconnected in such a way as to preserve the maximum possible picture quality.

#### *Recommends:*

1. To the Working Groups on Component Digital Video Standards and Component Analog Video Standards the Adoption of a Recommended Practice for the handling of setup in mixed component/NTSC facilities based upon the following principles:

- Preservation of the NTSC signal as it exists today.
- Operation with component signals having zero setup at the points of interconnection.

2. Since the mixed component/NTSC system must deal with the translation between NTSC signals with setup and component signals without setup while preserving maximum picture quality, the following specific Practices are recommended:

- Setup shall be removed in the process of decoding NTSC to component signals and shall be added in the process of encoding component signals to NTSC.

The setup removal may be via any of three methods:

- Fixed
- Manually adjusted
- Automatically adjusted

When a fixed setup removal is employed, the resultant system errors will be less than those of current NTSC practice.

- To ensure a more precise fixed setup removal, tight tolerances around the 7.5% value should be maintained on the setup of the NTSC signal.

- As part of the conversion, NTSC material which does not meet the tight setup tolerance should be corrected, either manually or automatically, to a 7.5% setup and correct peak white level.

- That it be recognized that an NTSC signal containing errors in setup and/or level errors, which is decoded to components in the digital domain, experience headroom and footroom problems resulting from the combined excursions of these decoded errors and signal ringing.

#### *Noting:*

It is understood that this proposal for a Recommended Practice would make no restriction on how a manufacturer handles a signal, with respect to setup and video levels, within its equipment.