*Audio Engineering Society*
*137th Convention*
Student Recording Competition
**Category 1 Submission**
**Traditional Acoustic Recording**
**Member 92981**

# RECORDING REPORT

## General Information

Recording Date: June 28, 2014
Music: *La bonne chanson* – "Donc, ce sera par un clair jour d'été" – Gabriel Fauré
Recording Type: Live concert recording
Recording Setting: Medium concert hall
Performers: Soprano soloist, string quartet, piano
Engineer: AES Entrant 92981
Recording Equipment:
      DAW: Pyramix 7
      Console: Euphonix control surface
      Converter: Lavry LE4496 Blue Series 8-Channel 824
      Preamps: Grace 801
      Microphones: Schoeps MK2H (x2), Schoeps MK4 (x2), DPA 4006 (x2), Neumann
      TLM 103 (x2), Neumann KM 140

## The Concept

The recording had to be accomplished in a live concert setting, so I planned to keep the microphone setup as simple and clean as possible, while still achieving a pleasing and acceptable classical recording aesthetic, as the recording was included in a pool of similar recordings from the series for national radio broadcast.

## The Recording

For this concert, the piano (a Steinway Concert D was placed in the horizontal center of the stage, slightly upstage from the other performers). The quartet was arranged in traditional configuration (from left to right: violin 1, violin 2, cello, viola) directly in front of the piano, centered horizontally around the piano crook. The soprano soloist stood in between the second violinist and the cellist, slightly in front of them, so that she was surrounded by the quartet. The hall had curtain systems in place on each of its four walls, so I adjusted these slightly to dampen any excessive reverberation. The curtains in the back of the hall were opened fully, while the front curtains were halfway opened and the side curtains were one-third opened.

I placed my main pair of microphones (Schoeps MK2H in AB configuration) approximately 1.1 meter from the front of the quartet (2.04 meters from the soprano), spaced 50 cm apart, 2.5 m high, and angled about 30 degrees downward toward the strings. I added a pair of piano spot microphones (Schoeps MK4) for greater clarity on attack, with one microphone aiming toward the front of the piano and the other aimed toward the bass strings of the piano (centered around the middle portion of the body of the piano). These microphones

were at a 120-degree angle from each other, 5 cm inside of the piano, 17 cm apart (capsule to capsule), and 20 cm up from the soundboard of the piano. I added a mono cello spot to be used minimally (Neumann KM 140) 40 cm high, 10 cm from the body of the cello, aimed slightly down toward the bridge of the instrument. A pair of vocal spot microphones (Neumann TLM 103) were added in front of the soprano, at her chest height (1.5 m), aimed 15 degrees upward at her nasal cavity, 50 cm from her mouth, with both microphones angled slightly outward (30 degrees from capsule to capsule) to add width to the voice, but minimize phase problems.  Finally, I added audience microphones (DPA 4006, black capsules) to catch applause and more room ambience, spaced 5 m apart, 3.2 m high, and 3.5 m from the performers. See Figure 1 for a visual representation of the layout of both performers and microphones.
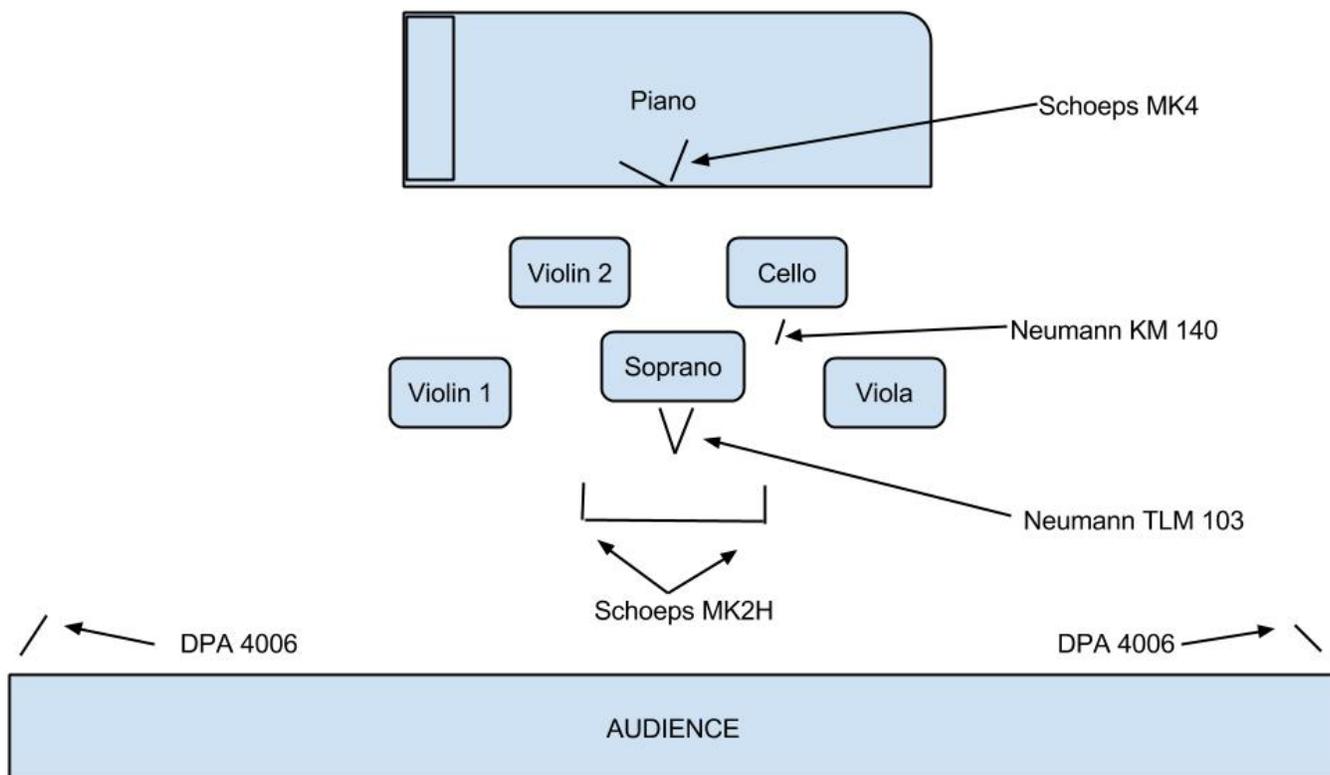


**Figure 1: Stage Configuration**

I selected the Grace 801 preamps for their renowned clean and accurate sound, and tracked the concert in Pyramix 7, creating both a live mix and then later remixing the concert to catch any nuance I perceived to be missing from the first mix.

The Mix

For the final mix, I kept the mains at unity gain, and adjusted the instrument spots to balance each other while maintaining as much clarity as possible. The audience was mixed in at a level that provided sufficient early reflections to convey the hall in which the performance was recorded, while still leaving room for most of the tail to be provided through my reverb send (Sonnox Oxford Reverb-Native). The cello was mixed in quite low

(-24.0 dB), as the ensemble balance in the mains was fairly pleasing, and even a little skewed toward cello. The audience microphones remained at -11.7 dB for added realism, and the piano spots stayed at -12.0 dB (just enough to add a little bit of punctuation and articulation to the piano phrases without overwhelming the strings). The vocal microphones were automated at the ends of phrases in the first half of the piece so that her diction could be clearly heard even when the strings swelled; these automations took her spots to peaks of -9.3 dB, but the levels rested at -11.7 dB for the majority of the recording. The reverb return stayed at a steady level of -7.6 dB for the entirety of the recording. See Figure 2 for an image of the mixer.



**Figure 2: Mixer**

As to imaging, mains, piano, and audience microphones were panned 100% left and right, with cello panned 15% to the right and the vocalist's microphones panned to 50% left and right (just to cause her voice to seem slightly wider and fuller in the overall image).

For my reverb, I altered the "Hall Silky" preset in the Sonnox Oxford Reverb, native version, changing the shape to a slightly wider space, decreasing the width by 7%, decreasing the overall size to 0.65 to match the performance hall, and decreasing the reverb time to 1.75 seconds for the same reason. I also pushed the reverb mix further toward the tail (0.85) than the preset. The reverb settings can be seen in Figure 3. I left the mains unprocessed as to the tonal and dynamic domains, but I did send it to the reverb at -11.0 dB. Piano was sent to the reverb at -9.0 dB; vocal microphones were sent to the reverb at -11.5 dB; cello was sent at -10.0 dB; and audience was not sent to the reverb at all, as this would be a redundancy (the audience microphones, as mentioned earlier, were used expressly for ambience). I sent the vocal microphones fairly low in particular, as the distance from her mouth to the microphones already provided a bit of space around the vocal, and I primarily wanted the reverb tail to be heard on her consonants. These levels can also be seen in Figure 2.



**Figure 3: Reverb**

I applied delay to the spot microphones with the Merging Technologies plugin Delay, using the calculation function of the plugin to obtain an exact number in ms of delay needed,

based on the measured distance between the spot microphones and the mains. A sample of this plugin's settings can be seen in Figure 4.
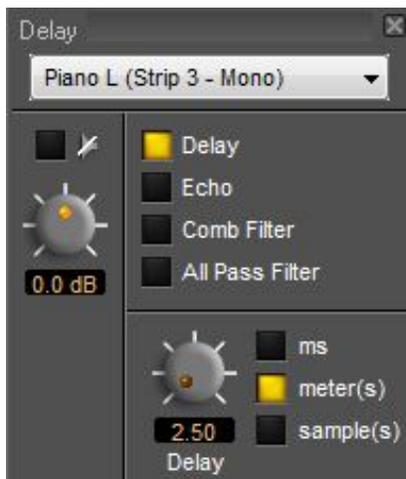

**Figure 4: Delay**

I also applied equalization with the Merging Technologies plugin EqX to the piano, vocal, cello, and audience microphones. All of these elements had a high-pass filter applied at 50 Hz, and then I added slight transient boosts on the vocal and cello microphones (3.0 dB starting at 6 kHz for the vocal and 2.0 dB starting at 6.0 kHz for the cello). I added a slight peak on the piano to help the pianist's articulation (particularly on the fast sweeping runs) cut through the mix, with an increase of 2.0 dB at 1.35 kHz at a Q of 6.0. I also added a boost on the vocal microphones at 700 Hz of 1.5 dB at a Q of 10.0 for a slightly warmer spot microphone sound. All of these EQ settings can be seen in graphic form in Figures 5-8.


**Figure 5: Piano EQ**

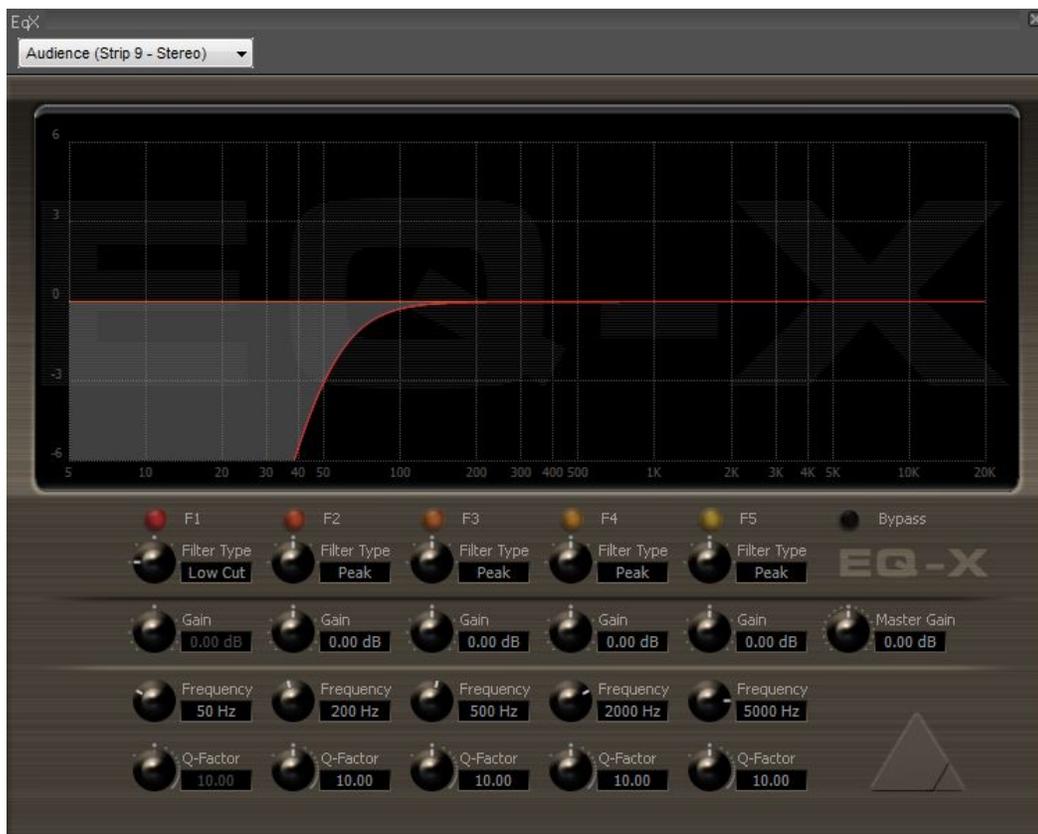**Figure 6: Vocal EQ**



**Figure 7: Cello EQ**

**Figure 8: Audience EQ**

<u>Recommendations</u>

If I was to get to do another recording in this style with this type of ensemble, I would want the main microphones to be slightly closer (maybe just 5 cm lower) to the strings, while perhaps separating the soprano in some way from the main ensemble, rather than setting her directly in the center of the ensemble. This would allow for more general ensemble clarity. I would like to record this performance in a studio setting rather than a concert setting to eliminate the audience noises, as well. I would have also liked to mix this recording with a convolution reverb (if I had had access to such a plugin) instead of a reflection modeling reverb, as I believe this would be slightly more realistic. Overall, however, I was pleased with the timbre of the recording and would enjoy recording these performers and this repertoire again in the future.