

Mics & Miking Techniques—**Inside Hollywood's Famed NRG Studios**

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VOL. TWENTY NINE  
NUMBER ONE

OCTOBER 2015  
USA \$5.99  
CANADA \$5.99





# Once More, With NRG

## Tracking a jazz artist's second album starts with choosing the right mics

For two days in August 2015, I had the pleasure of recording composer/guitarist Drew Simpson's band at NRG Studios in North Hollywood, CA ([nrgrecording.com](http://nrgrecording.com)). We had been planning to start a new record for four years, ever since completing Drew's first release, *Noteworthy*, in 2011.

*Noteworthy* was fun to create, with many fantastic musicians, great music, good sounds, and Drew and I becoming fast friends over the months of recording and mixing. During that time Drew and I both lived in Southern California, but since completing the project, I moved to Maine. The logistics of starting a second bi-coastal album proved challenging. Finally, in the spring of 2015, we decided to do it again.

### Choosing the studio

For Drew, the first steps in the process included writing and arranging new tunes. Following this, he notated the parts and booked his favorite players for the two-day session. Drew also organized several rehearsals to ensure the various musicians—one drummer, two bassists, two pianists, two trumpeters, and one saxophonist—were all prepared.

For my part, preproduction consisted of finding a studio, determining a suitable instrument layout, and choosing microphones. Picking a studio proved to be somewhat difficult, as I could not check out the various options in person due to my residency in Maine. Making the last record, Drew and I had enjoyed working at the Castle Oaks studio in Calabasas, CA, but the facility had closed in the interim.

Unsure of where to turn, I contacted Ellis Sorkin of Studio Referral Service ([www.studioreferral.com](http://www.studioreferral.com)) for assistance. SRS is a unique company, offering a

By Eric Ferguson • Photos by Miguel Pola

link between artists, engineers, and producers with recording studios around the world. I called Ellis and told him our needs and budget, and he suggested several facilities. He then called several studio managers, confirmed availability, and negotiated a discount rate. Best of all, the service was free! The studios, not the artists, pay a small fee. I highly recommend SRS if you ever find yourself in search of a studio.

The biggest challenge in choosing a studio was finding one with enough isolation booths and suitable lines of sight. The session was to have six or seven simultaneous musicians, and the music style (fusion jazz) required significant isolation. Most of the instruments were acoustic, and isolating the quiet parts (upright bass, acoustic guitar, and piano) from the louder (drums, electric guitar, horns) was essential. Also imperative was musician line of sight. Improvisatory jazz relies on eye contact, with all musicians needing to see Drew, most needing to see the drummer.

Eventually we decided upon NRG Studio A in North Hollywood. A Los Angeles staple for many years, the studio is world-class, with awesome gear, great rooms, and friendly staff. The studio (Figure 1) offered a large drum room, two sizeable





booths for piano and upright bass, and two smaller booths for horns and guitar. Electric instruments such as bass guitar and synthesizer were to be taken direct, with the musicians placed in the main room near the drums for easy communication. The acoustic guitar booth would also house Drew's guitar amp. On acoustic songs Drew would play nylon or steel string guitar in the booth. On electric tunes, he would sit in the live room, near the drums, and feed his amp isolated in the booth.

Even with all the separate booths, compromises still had to be made. While Drew originally wanted to have multiple horns performing live, I convinced him to stick to one player at a time. The size of the horn booth was simply too small for multiple players.



### Choosing the mics

A key step in the preproduction process is picking mics. Philosophically, I tend to use more mics than necessary, embracing the luxurious high track count of modern DAW recording. While others sometimes judge overmiking as an inability to commit on a session, I prefer the safety of redundancy. Sure, I rarely use all of the mics when mixing, as phase problems grow with excess mics, but I love having varied choices long after recording. Sometimes it's difficult to know what the sonic footprint of the project will end up as, while still on the first tracking session.

Before discussing mic choices, let me first mention that a link to free multitrack files can be found online at the Recording



website at <http://is.gd/OnceMoreWithNRG1> (a page in the *Recording* online reference library). Please download the files and check out what the various mics sound like.

Note, however, that all sources went through NRG's awesome 1970s Neve 8068 console. Most microphones, certainly the drum mics, received EQ and are not heard flat in the files. In my opinion, the whole purpose of working on a classic console is to hear it, and I'd rather employ luscious analog EQ when tracking than save the task for later via a digital plug-in. This said, my EQing is fairly subtle, and the raw tracks are pretty similar to the untreated mics. The console's EQ was easy to hear and is not very surgical in bandwidth; a little went a long way, and it sounded fantastic!

### Kick

I initially feared the worst when learning the drummer was to bring an 18" bass drum. Jazz kicks are often small and wimpy, more reminiscent of a rack tom. Luckily a hole was available for miking and the drummer had great skill in making it sound incredible.

I placed three mics on the instrument. Inside, pointing at the beater, was a Shure Beta 91. A favorite of mine, this flat condenser boundary mic always delivers great snap. In the hole was a Shure Beta 52, a large diaphragm dynamic with a frequency response especially tailored for the kick. For extra redundancy, a Neumann U 47 fet was placed a foot or two in front of the drum. Using this vintage mic was a total treat for me, as they are rare, expensive, and offer a massive bottom end. See Figure 2 on page 16.

Leakage from cymbals was inevitable with the outside-the-drum Shure and Neumann, so a packing blanket "tent" was built around the two mics. A few pieces of gaff tape held the blanket to the kick, and a couple of small mic stands propped it up.

### Snare

Three mics were also employed for the snare. On the top of the drum, pointing at the center of the head, was a Sennheiser MD 441. A supercardioid dynamic, the 441 offers a wider frequency response than the venerable Shure SM57. While I love a 57 on rock sessions for its midrange crack, the 441 offers the sizzlier highs and beefier lows.

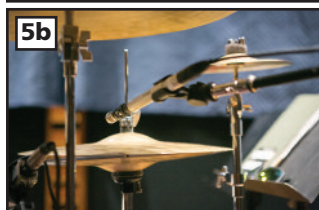
Taped to the side of the Sennheiser was a Shure Beta 98 D/S. This miniature condenser, often seen on toms, also has a supercardioid pattern, allowing it to mate nicely with the 441. The shared supercardioid pattern allowed me to position the 441/98 combo so the hi-hat would be in the off-axis null of both mics, thus reducing leakage.

Some readers might be unfamiliar with the old trick of taping two mics together for the snare top (Figure 3). The purpose of this technique is to have two very different mics on the all-important snare drum. The 98 sports the transient clarity and high end response of a condenser, but can suffer increased leakage. The 441, in contrast, offers dynamic mic punch and a tighter polar pattern, but its high frequency response can be cloudy compared to a condenser. Taping the mics together, with their diaphragms as close as possible, is critical. This ensures the phase response of both mics is matched up.

The third mic on the snare, an AKG C451, captured the drum's bottom (Figure 4). Snare bottom mics always offer great sizzle and personality. For this mic, I was a bit more drastic with my use of EQ, greatly filtering the bass, scooping the mids, and adding brightness to the treble.

### Toms, Hat, and Ride

Regarding toms, I lucked out when the drummer brought only two. While I love toms, the more there are, the harder they are to record and mix. The simple rack and floor tom setup also allowed me to use NRG's pair of 1970s AKG C414s. These two microphones sounded excellent, sporting vintage C12 capsules. Many types of mics work on toms, and large-diaphragm condensers such as 414s are always a nice choice. Another benefit with 414s is that they can be easily switched between cardioid and supercardioid. This grants flexibility in reducing the splash of cymbals that might be placed either to the side of, or behind, the mics.





AKG C451 condensers were chosen for the hi-hat and ride. Also classic, these pencil condensers sound great on anything. I did have issues placing the hat mic, though, as the drummer placed a small splash cymbal right where I normally place the mic. As a general rule, I always work around the drummer's needs, and I found a suitable replacement location. The hat received copious amounts of EQ via a vintage outboard Pultec EQP-1A3.

A ride mic was also deployed. In all honesty, I rarely like the sound of close-miked cymbals, and I will only use the ride mic when necessary in the mix. This said, the AKG C451 sounded good with significant console EQ. See Figures 5a-5c on page 18.

### Overheads and rooms

Two additional mic pairs wrapped up the drum-miking extravaganza. For overheads, I was blessed with vintage Neumann U 67s. Produced between 1960 and 1971, the U 67 is the one of the world's truly classic tube mics. On this session their sound was creamy and delicious. Placement was fairly low, a few feet above the drums, spread about a foot on each side of the drummer's head. See Figure 6.

As in almost every recording session, a few challenges had to be overcome. In this case the live room, while fabulous-sounding, was a bit too huge. Bright and ambient, its significant reverb was overly apparent upon initial listen in the overhead mics. While ideal for a more roomy rock sound, both the drummer and I felt it inappropriate for the intimate jazz approach of this project. Luckily it's easy to temporarily deaden a live room: the assistants and I placed carpets, gobos (portable acoustic panels), and packing blankets near the drums. This helped the closer mics, specifically the overheads, to sound tighter, while still allowing the farther room mics to bathe in reverberant goodness. See Figure 7.

To mic the room, a pair of Coles 4038 ribbon mics were spaced wide, about twenty feet apart and an equidistant fifteen feet or so from the kit. At first the pair seemed uneven in tonality, but I did not get to adjust them due to being behind schedule. Then, after recording the first song, the band took a break and I was able to move the mics closer to each other by five or six feet. Pulling the microphones away from the walls reduced modal issues and gave a more similar frequency response and stereo image.

### Bass

Both electric and upright bass were recorded on the sessions, alternating between the fusion and acoustic jazz tunes respectively. Electric bass was fairly straight ahead, running direct. We did try out several DIs before the bassist and I were satisfied. We started with an A-Designs REDDI, an amazing all-tube direct box and preamp known for its warm tube sound. Oddly, we found the bass a bit overdriven through the REDDI, and ultimately we settled upon a Retrospec Juice Box.

For upright bass, I chose one of the most famous mics of all time: a Neumann U 47 large diaphragm tube mic. It sounded great, but did require position experimentation. As a general rule, large instruments are more challenging to mike, as their sound emanates over a greater space and significant sonic differences exist throughout their large near field. With an acoustic bass, miking near the F hole produces subwoofer-like boom. Alternately, sliding the mic upwards near the fingerboard captures more top end and articulations. Finding the ideal balance, while simultaneously staying out of the way of the player and his or her bow, can sometimes be difficult. See Figure 8.

In this case the challenge proved to be buzzing within the bass itself. This forced several mic movements, and ultimately I had to accept the

buzz. Luckily, a second bass player was used for several songs, and his instrument was less noisy. Other than the buzz, both basses sounded good, individually unique, and both musicians were fantastic.

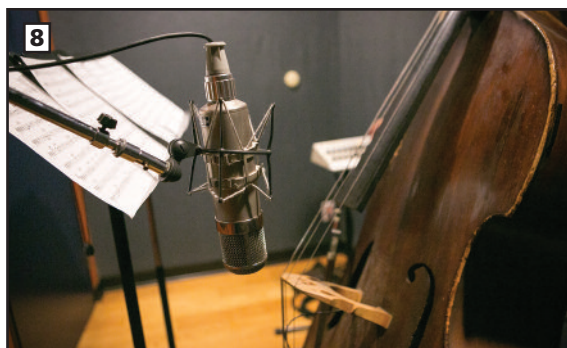
As a redundancy measure, I recorded both upright basses' pickups through a Retrospec Juice Box DI. While not natural-sounding, a pickup can sometimes offer a useful color when mixed with a mic.

### Piano

I was initially unhappy with the studio's piano. NRG is known for hard rock, and the piano is a super-bright Yamaha C7. The pianists on the session loved the instrument, but I feared it would not be mellow enough in tone for Drew's music. Luckily, we employed a talented piano tuner to tweak the piano before both tracking days, and I eventually grew to dig its bright tone.

In search of a mellower sound, I compared a pair of Coles 4038 ribbons with a pair of original AKG C12s. The C12s ultimately won. Extremely expensive and highly sought after, the C12s sounded great. One of the mics showed its age, though, as its built-in clamp would not keep the mic at the desired angle. To solve the problem, we used a second mic stand and gaff tape to rig extra support. See Figure 9.

Miking a piano is an art itself, and this article is too short to explore the topic. This said, I tried multiple positions, balancing phase coherency, tone, and stereo imaging. Ultimately I placed the mics wider than normal, and now,





after the session, I am worried that I may have set myself up for phase issues. Several days after we finished, I woke up in the middle of the night, realizing I should have placed a second, narrower-spaced mic pair on this all-important instrument. Yes, recording engineers also suffer anxiety dreams!

Unfortunately, the studio's Pro Tools rig was limited to 28 inputs, and there simply was not enough real estate for more mics. We actually used all 64 channels on the console for this session! Maybe I should have sacrificed some drum mics for the piano. Oh well, I'll find out in the mix...!

### Electric guitar

Miking Drew and his guitars was fairly simple. On his Fender Twin, I placed the ever-popular Shure SM57. Next to it, as close as possible in order to minimize phase issues, was a Royer R-121 ribbon (see Figure 10). I love a ribbon-dynamic mix on guitar amps. The 57 dynamic provides midrange bite, but rolls off gradually in the low end. The ribbon, conversely, is mellow in the top end but offers the bigger, fatter bottom, key to Drew's jazzy sound.

As a side note, there was a notable guitar tragedy on the session. When removing his Les Paul from a multi-guitar stand, his just-purchased, perfect condition 1969 Gibson ES175 fell from the stand, striking the floor, snapping the headstock clear off. Drew was beside himself, and faced an uphill battle to maintain composure. Following this disaster, we rented several incredible guitars from Brett Allen Studio Rentals, but none inspired Drew. He instead recorded all electric songs on this trusty Les Paul. Unfortunately this may mean we might need to overdub several hollow body guitar tracks at a later date. As for the ES175, we've been told that guitar can be repaired.

### Acoustic guitar

Several songs featured nylon classical guitar and one sported steel string acoustic. Two classic Neumann KM84s miked the guitars, their positions changing somewhat between the nylon and steel stringed instruments. See Figure 11.

As mentioned earlier, we crammed Drew into the guitar amp booth to isolate his acoustic guitars from the drums. This proved problematic. The booth had no acoustic treatment, and significant air conditioner rumble was audible, even after turning the AC off. Resorting to the same tricks used in low-budget home studios, we gaff taped multiple packing blankets to the walls to reduce high frequency reflections. As for the rumble, little could be done, and I placed a steep high pass filter on the monitor side of the console to imitate the drastic EQ that will be necessary in the mix. Luckily, both guitars featured great-sounding pickups, which were captured through an Avalon U5 DI. The DIs provided ample, rumble-free low end to make up for the filtering on the mics.

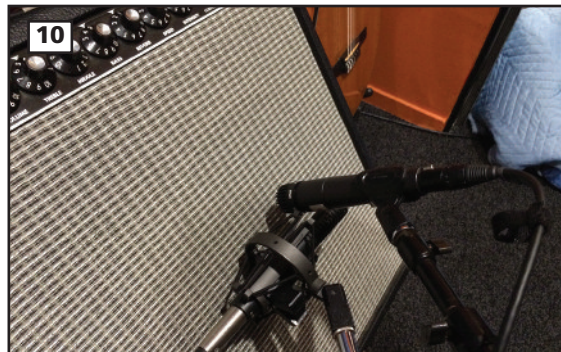
### Horns

Each song also featured a single horn soloist, and with two trumpeters and a tenor saxophonist alternating. Similar to the issues faced in the guitar booth, the horn iso was not acoustically treated, a fact I would have caught on a pre-session tour had I not lived on the other side of the country. The space sounded like a bathroom, and the horns would certainly suffer phase issues from reflections off the close, hard, walls. With no alternative spaces, we assembled a pile of blankets and foam and did our best to treat the room. Unfortunately, under time pressures to get recording, it wasn't until the second day that we squeezed a gobo into the booth, finally swallowing the room's low mid resonance. This meant the sax tracks, only recorded on day one, all sound honky to me. I hope mix EQ can save the day.

As for mics, the horns were captured with a vintage Neumann M49 tube condenser and a Royer R121 ribbon (see Figure 12). The horn players preferred the ribbon, but the room issues are more significant with that mic, as its bi-directional pattern captured the ambient reflections off the front wall at the rear of the mic. Unfortunately, the size of the 49 meant I could not get the two mics' capsules close enough together to mix them without phase issues. Thus I learned another important engineering lesson: if I am going to use two simultaneous coincident microphones, make sure they are small enough to both truly occupy the same location!

### Talkback

While not recorded, multiple additional mics, all Shure SM57s, were placed at the musicians' stations for talkback. This meant that communication could easily be heard in the headphones and control room between songs. I would simply mute the talkback mics on the console whenever recording commenced.



### Moving forward with the project

Despite the technical challenges, the two days of recording went quite smoothly from a musical standpoint, and Drew and the others are pleased with the outcome. At the time of this writing it is still too early to know if all eleven songs are keepers. With dozens of takes to sort through, it will be a while before we know if an additional tracking session is required for the record.

Overdubs also await, including horn sections, guitar layers, and possible solo fixes. I'll keep you posted, as this should continue to be a very interesting project. ➤

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*Eric would like to thank Miguel Pola for his fantastic photography; learn more at [www.miguelpola.com](http://www.miguelpola.com). Drew Simpson's music can be heard online at [www.drewsimpsonmusic.com](http://www.drewsimpsonmusic.com).*