SUPPLEMENTARY MATERIALS FOR JSR DATA ARCHIVE.

APPENDIX: *WILLIS, B.J.,* AND *TANG, H.*, 2010, Three-dimensional connectivity of point bar deposits: Journal of Sedimentary Research, v. #, p. #-#.

INTRODUCTION TO APPENDIX

Additional visualizations of the modeled channel-belt deposits discussed in this paper are presented to better illustrate complex patterns of bedding and facies that can be preserved by the migration of river channels. The first two figures in this appendix show multiple parallel cross sections through modeled deposits in strike orientation (Fig. A1) and dip orientation (Fig. A2) to highlight differences between cases with contrasting migration pattern and aggradation. The other figures are movie files showing output of point bar models. The first of these movies (Fig. A3), depicts basic geometric relationships one needs to consider to understand the geometry of heterogeneities in deposits of meandering channels. The final eight movies (Figs. A4 to A11) show a more exhaustive set of serial cross sections, horizontal slices, and a sequence with progressively higher permeability facies made transparent to show the geometry of coarser-grained bodies. Key variables that control the distribution of facies in these models are the relative extent of channel-bend migration by downstream translation and expansion (sinuosity increase), and amounts of vertical aggradation. A caption for each figure in this appendix is presented below.

Figure A1.— A succession of depositional-strike-oriented cross sections of channel-belt models showing the geometry of bedding and permeability variations. Models shown are 2 km long by 1.5 km wide. Strike-view cross sections highlight the downstream alternation of more permeable and less permeable facies along channel-belt margins and the overall thinning of deposits toward the channel-belt axis. For cases formed dominantly by downstream channel transgression (A & B) facies variations along belt margins reflect an alternation between point-bar deposits and concave-bank deposits. For cases formed by channel expansion (C & D), this alternation reflects the local carving of the meander loop in one direction away from the channel-belt axis. For combined migration, both processes add to variations along the channel-belt margin. For combined migration and switching there are more complicated variations along channel-belt margins, reflecting both more elaborate migration paths and greater dissection by channel-abandonment fills. Comparing models with and without vertical aggradation, note in particular that aggradation improves connections between adjacent bar deposits across the channel-belt axis.

Figure A2. — A succession of depositional-dip-oriented cross sections of channel-belt models showing the geometry of bedding and the variation of permeability. Models shown are 2 km long by 1.5 km wide. Dip-view cross sections provide another view of downstream and lateral stacking of more permeable and less permeable facies along channel belts. Comparing models with and without vertical aggradation, note that aggradation tends to increase bar connectivity along channel-belt margins for cases with translation by preserving the basal part of the previous bar deposit under the succeeding bar.

Figure A3.— Movie 1.— Basic geometric relationships that define the geometry of heterogeneities within deposits of meandering channel belts are shown by progressive changes as a channel migrates. The key point is that channel-belt deposits do not contain channel-shaped internal elements, but rather the geometry if heterogeneities reflect the cumulative sweep of channel segments as they migrated (this movie is essentially a dynamic version of Fig. 4 included in the paper). The presentation shows four views of a migrating channel or its deposit: (1) increase in maximum channel depth with increasing channel sinuosity (channel is 60 m wide, hotter colors show deeper areas 0 to 6 meters deep); (2) increase in the sorting of different grain size classes across a channel bed with increasing channel sinuosity (hotter colors are coarser grained, divisions in phi increments from coarse silt to very coarse sand); (3) development of the basal erosion surface of the channel belt as a channel migrates downstream and increases in sinuosity (topography in meters below original floodplain surface); (4) Growth of deposits coarser than the mean grain size as the channel migrates downstream and increases in sinuosity (thickness contoured in 0.5 m increments).

Figure A4. — Movie 2.— Channel deposit formed by expansion (increase in sinuosity).

Figure A5. — Movie 3.— Channel deposit formed by expansion and vertical aggradation.

Figure A6. — Movie 4.— Channel deposit formed by downstream translation.

Figure A7. — Movie 5.— Channel deposit formed by downstream translation and vertical aggradation.

Figure A8. — Movie 6.— Channel deposit formed by both downstream translation and expansion.

Figure A9. — Movie 7.— Channel deposit formed by downstream translation, expansion, and vertical aggradation.

Figure A10. — Movie 8.— Channel deposit formed by channel switching while migrating in a pattern similar to that in Fig. 8.

Figure A11. — Movie 9.— Channel deposit formed by channel switching while migrating in a pattern similar to that in Fig. 9.