



## Permian Basin Section SEPM 2013 Spring Field Trip



### ***Improved Models for Exploration- and Production-Scale Heterogeneity on Isolated Carbonate Platforms: Crooked-Acklins Platform, Southern Bahamas***

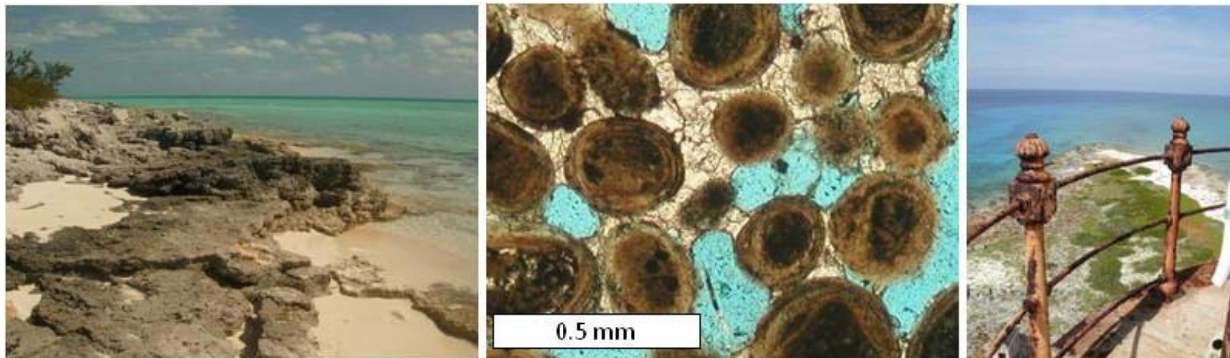
**Led by:**

**Dr. Gene Rankey**

*Co-Editor, Journal of Sedimentary Research  
Kansas Interdisciplinary Carbonates Consortium  
Dept. of Geology, University of Kansas  
1.785.864.6028, [grankey@ku.edu](mailto:grankey@ku.edu)*

**April 23 – April 27, 2013 (3 days in the Field)**

**April 26 – May 1, 2013 (4 days in the Field)**



***Improved Models for Exploration- and Production-Scale  
Heterogeneity on Isolated Carbonate Platforms:  
Crooked-Acklins Platform, Southern Bahamas***

***Objectives***

This field seminar focuses on conveying fundamental concepts of carbonate sedimentation, stratigraphy and early diagenesis, as can be applied to understand carbonate hydrocarbon systems. In this field course, these principles are derived first-hand by participants from observations of patterns and processes from Pleistocene and Holocene carbonates of Crooked-Acklins Platform, southern Bahamas. These concepts are broadly applicable to isolated platforms that may be exploration and production targets. Topics of focus include:

- Discerning the characteristics of carbonates from different depositional and diagenetic environments, and how they might be recognized in the geologic record;
- Observing the different scales of heterogeneity in these carbonate depositional systems using field and remote sensing observations;
- Recognizing the controls on this heterogeneity, including geological, physical, chemical and biological oceanographic aspects;
- Placing these observations into a global (Holocene) and geological (deep-time) perspective; and
- Developing meaningful, predictive conceptual models of reservoir geometry and continuity and possible play relationships in subsurface analogs.

***Who should attend?***

Because the trip focuses on addressing the fundamental controls on carbonate systems with a global and a deep-time reservoir perspective, most concepts are broadly portable, beyond this platform. Comparable past seminars by Rankey have been attended by geologists, geophysicists, reservoir engineers, and even managers and vice-presidents from both majors and independents in the United States, Canada, Great Britain, Saudi Arabia, Indonesia, Norway, Brazil, and elsewhere.

**This trip is not for geologists on a beach-bumming boondoggle!** The work will be hard; participants should plan on critically discussing field observations in terms of potential fluid storage and movement (porosity and permeability), reservoir and barrier continuity (compartmentalization) and recovery potential (oil-water relative permeability, connectivity). These discussions will provide insights into the possible future subsurface reservoir, knowledge that can be applied to provide useful and profitable insights into past performance and predict the future response of carbonate reservoirs.

***Why study the Holocene and Pleistocene of Crooked-Acklins Platform?***

In general, study of the Holocene offers several unique opportunities, including direct observation (and appreciation) of the scale of facies heterogeneity in plan view. Our observations will focus on 1) textures, grain types, organisms, sedimentary structures and early diagenetic alteration; and 2) explicit and clear assessment of the influence of different variables (e.g., hydrodynamics, bathymetry, organisms) on these patterns. These will provide the basis for a deeper understanding of possible variability in reservoir analogs.

The Crooked-Acklins Platform (CAP) is an ideal location for learning many fundamentals of carbonate sedimentary systems. Located between the Great Bahama Bank and the Caicos Platform, the CAP includes all of the “classic” Holocene environments of both areas, including both wave- and tide-influenced sedimentary systems. Importantly, these different environments all occur in close proximity, such that long boat rides are not necessary to see the entire spectrum of environments. Instead, participants focus on observing, discussing, and learning.

Each part of this system has been systematically studied, and participants will be exposed to novel data and new insights regarding sedimentary patterns and fundamental controls, including waves, tides, and geochemical and biological factors. Different Holocene environments that participants examine include:

- Shelf-margin barrier reef, the third longest in the Caribbean, and outboard drop-off and slope;
- Reef sand apron and back-reef shelf environments;
- Shelf-margin oolitic – skeletal shoal complex, shaped by tides;
- Grain-dominated platform interior, influenced by waves and tides;
- Progradational oolitic beach ridges;
- Tidal flat complex, including both a channeled belt and a progradational shoreline, with expansive hardgrounds; and
- Evaporative ponds.

Likewise, outstanding exposures of Pleistocene strata we will visit include:

- Shelf-margin reef and associated patch reef deposits; and
- Progradational, upward shoaling oolitic shoreline deposits.

**WARNING:** The trip includes physical exertion, and marked by considerable time in and on the water. These require that participants be able to swim in some rigorous environments. Similarly, it will take place in the subtropics in spring-summer, and heat and dehydration can be an issue. All participants must sign a legal liability waiver.

### ***INSTRUCTOR***

**Dr. Gene Rankey**, Associate Professor, University of Kansas.

Rankey has mounted field campaigns to study Holocene isolated platforms in the Bahamas, Turks and Caicos, French Polynesia, the Cook Islands, and Kiribati. He has studied sedimentary and geomorphic patterns of over 100 isolated platforms around the globe using a combination of remote sensing, core, oceanographic and seismic data. His 2008-2009 AAPG Distinguished Lecture tour highlighted some of these recent studies. As an employee of ExxonMobil, as a consultant, and in academia, his experience and perspectives included study of numerous reservoir analogs (Devonian, Carboniferous, Jurassic, Cretaceous, Neogene), integrating core, well-log, seismic stratigraphy, and seismic attribute analysis to better understand and predict reservoir quality. He has led numerous trips to ancient and Holocene systems for AAPG, SEPM, and academic and industry groups.

**LOGISTICS – Please Read Carefully!**

**Cost**

The PBS-SEPM Annual Spring Field Trip provides an opportunity for the Society to fund our student scholarships and other society related projects. Thank you for your support.

There are **ONLY 14 available slots** for each trip. All registrations will be on a **FIRST COME, FIRST SERVED** basis, and will be considered reserved only when **50% down payment** is provided to PBS-SEPM. **We REQUIRE 7 participants for each trip to make**, so the Society does not lose any money. The DEADLINE to determine if one or both trips will make is January 18, 2013. If they do not make, 100% of deposit will be returned. If the trips do make, registrations will be accepted (until all slots are filled). In this case, **100% of the fee is required by the DEADLINE of March 22, 2013**. We have been told that April-May is one of the busiest times for Crooked Island, and it is strongly recommended that you make flight reservations as early as possible.

The total fee for each seminar is:

Tuesday, April 23 – Saturday, April 27, 2013 (3 days in Field):

Field Participant	<b>\$2400</b> (+400 single room)
Non-Participant (spouse)	<b>\$1900</b>

Friday, April 26 – Wednesday, May 1, 2013 (4 days in Field)

Field Participant	<b>\$2900</b> (+500 single room)
Non-Participant (spouse)	<b>\$2300</b>

The fee includes:

- Lodging (double occupancy, limited to 4 slots per trip for single occupancy); web site address <http://crookedislandlodge.com/>
- Breakfast, lunch, dinner, snacks, and non-alcoholic drinks on Crooked Island
- Boat and guide costs on Crooked Island
- Local transportation in Nassau to airport, and ground transportation on Crooked Island
- Field Guidebook

The fee does not include (see below for logistics details on these points):

- Hotel rooms, meals, or drinks in Nassau before or after the field trip
- Transportation from the airport in Nassau
- Flights to or from Nassau or Crooked Island
- Personal expenses, including bar tabs

The most important points: THE SEMINAR BEGINS AND ENDS AT THE AIRPORT ON CROOKED ISLAND, BAHAMAS. **PARTICIPANTS ARE RESPONSIBLE FOR MAKING ALL OF THEIR OWN FLIGHT AND NASSAU ROOM RESERVATIONS TO AND FROM THERE. BECAUSE THERE ARE LIMITED ROOMS, AND ONLY TWO FLIGHTS EACH WEEK, WITH LIMITED SEATING, IT IS IMPERATIVE THAT YOU MAKE PLANS WELL IN ADVANCE.**

Please be aware that the following logistical details apply to both trips. However, the dates are different depending on which trip you are taking. Please refer to the schedule of dates below.

### 3-DAY FIELD TRIP

- Arrive in Nassau Tuesday April 23, 2013
- Arrive on Crooked Island Wednesday April 24, 2013
- Depart to Nassau Saturday April 27, 2013

### 4-DAY FIELD TRIP

- Arrive in Nassau Friday April 26, 2013
- Arrive on Crooked Island Saturday April 27, 2013
- Depart to Nassau Wednesday May 1, 2013

The 3 day trip will officially begin at 10:00 am, Wednesday, April 24, 2013 at the airport on Crooked Island. To get there, however, you must arrive in Nassau (NAS) on Tuesday afternoon or evening (April 23), stay in a hotel in Nassau Tuesday night, to catch the early morning flight to Crooked Island.

The 4 day trip will officially begin at 10:00 am, Saturday, April 27, 2013 at the airport on Crooked Island. To get there, however, you must arrive in Nassau (NAS) on Friday afternoon or evening (April 26), stay in a hotel in Nassau Friday night, to catch the early morning flight to Crooked Island.

Major airlines fly daily to and from Nassau, including Continental, American, Delta, Bahamasair and Spirit. Experience suggests that flights through Ft. Lauderdale have fewer issues than those from Miami. Bahamasair flies to/from Crooked Island **only** on Wednesday and Saturday. If you cannot make it to Nassau the night before (**April 23 or April 26**), you will miss the trip, because the flight to Crooked Island is early in the morning. **Please plan accordingly.**

Between the arrival in Nassau on Tuesday (or Friday), and our departure Wednesday (or Saturday) morning, we suggest staying at the Wyndham on Cable Beach, Nassau [<http://www.wyndham.com/hotels/NASBS/main.wnt>]. **Participants are responsible for making and paying for their own hotel reservations in Nassau on Tuesday night, April 23, 2013; or Friday April 26, 2013;** we recommend the Wyndham, but other less expensive hotels are available. We will have an 'unofficial' group dinner in Nassau on Tuesday (or Friday) night, and coordinate transport to the airport the next morning as appropriate. Participants will be contacted before the trip to arrange this dinner.

**Each participant is responsible for making and paying for their own plane reservations** to Nassau and for the Bahamasair flight from Nassau (NAS) to Crooked Island (CRI).

The trip will end Saturday morning, April 27 (3-day trip), or Wednesday morning, May 1 (4-day trip), at the Crooked Island airport. Each participant is responsible for making their own travel plans back to Nassau, and beyond. The Bahamasair flight from Crooked Island to Nassau leaves at ~11:00. It likely will not arrive in Nassau before 12:30 pm ("If you've got time to spare, fly BahamasAir..."). **If booking flights beyond Nassau back to the U.S., remember that you will also clear US Customs in Nassau – be**

**sure to allow ample time.** Booking too close will risk missing your connection – it has happened before. If you cannot miss your flight, be sure to allow sufficient time.

**\*\*NOTE: THERE IS LIMITED SEATING ON THE NASSAU-CROOKED ISLAND AND RETURN FLIGHT. BOOK EARLY, OR THERE MAY NOT BE AVAILABLE SEATING. THERE ARE ONLY THESE TWO REGULARLY SCHEDULED FLIGHTS WEEKLY \*\***

#### **Immigration Requirements**

Entry to the Bahamas requires a passport for U.S., Canadian, and British citizens; additionally, visas commonly are required for others. **It is your responsibility to determine if you need a visa.** Check with a nearby consulate or embassy, and double check with your travel agent.

## Enrollment Procedures

Complete the registration form below, return with at least 50% of fee payable to PBS-SEPM (cash, check, or credit cards are accepted).

PBS-SEPM  
C/O Paula Mitchell-Sanchez  
PO Box 1595  
Midland, TX 79702  
([wtgs@wtgs.org](mailto:wtgs@wtgs.org); 432-683-1573)

## CRITICAL DEADLINES

**January 18, 2013 – Trips Viability Determined (NEED 7 Registrants per trip)**

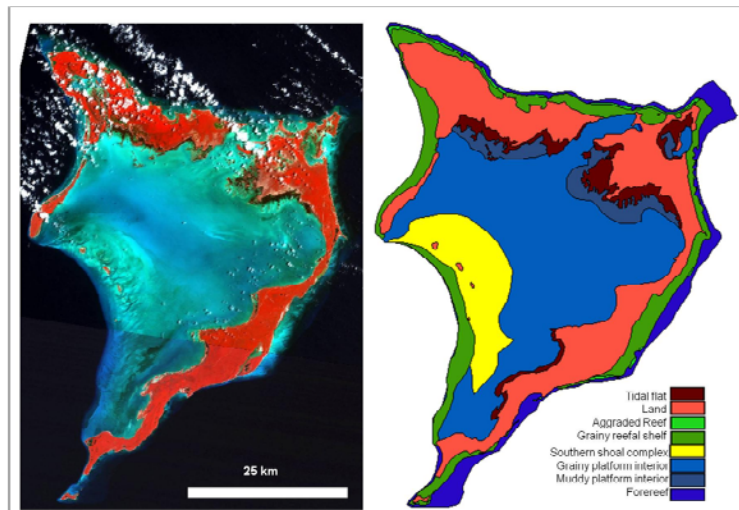
**March 22, 2013 – 100% of FEE must be paid**

**Registration is complete only upon receipt of registration form and the 50-100% of registration fee.**

**Participation is limited to 14 delegates per trip, so sign up early.**

## Refund policy

Upon determination that a trip will not occur (January 18, 2013), registrants will be refunded 100% of their deposit/fee. From January 18, 2013 to March 22, 2013, *half of 100% of fee is refundable if reservation is cancelled* (at least 1 month in advance). For registrants who have only paid their 50% deposit, this will not be refunded. **No refunds** are available after March 22nd. In either case, however, the cost is *fully transferrable to another person*. Due to the limited flight availability to and from Crooked Island, however, please be aware that late additions or replacements may not be possible.



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REGISTRATION FORM

***Improved Models for Exploration- and Production-Scale  
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April 26 – May 1, 2013***

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

BUSINESS PHONE ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_

Date of Trip \_\_\_\_\_ E-Mail: \_\_\_\_\_

RELEVANT SWIMMING/SNORKELING EXPERIENCE \_\_\_\_\_

PLEASE MAKE CHECKS PAYABLE TO: **PBS-SEPM**

Please remit check (or phone in credit card) and registration form by January 18, 2013 to:

PBS-SEPM

P.O. Box 1595

Midland, TX 79702

([wtgs@wtgs.org](mailto:wtgs@wtgs.org); 432-683-1573)

**Don't forget:**

- Make your plane reservations
- Make hotel reservations in Nassau