Countermeasures

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Introduction

I became a virtuoso of deceit. It wasn't pleasure I was after, it was knowledge. I consulted the strictest moralists to learn how to appear, philosophers to find out what to think and novelists to see what I could get away with. And in the end, I distilled everything down to one wonderfully simple principle: win or die.

Christopher Hampton
Dangerous Liaisons (screenplay) (1989).

Although the above quote has no direct connection to polygraph, it probably is one of the most accurate descriptions of the mindset of a deceptive person facing a polygraph examination. The person who has been compelled to take a polygraph examination, but knows that the truth is certain to hurt him has little choice but to take the test and hope for the best or find some way to defeat the test; win or die. You should assume that every examinee who comes to the examination with a plan to lie will attempt some type of countermeasures. The results of the examination might have a truly profound effect on the examinee's future; the stakes are high. As the character in Christopher Hampton's play realized, the art of deception is not easy and to have any hope of success, you must have some tools.

In the Information Age, tools can be easily found. In addition to a handful of books on countermeasures, there are Web sites dedicated to teaching people how to defeat the polygraph. Even fairly innocent sources such as Wikipedia contain information regarding countermeasures. This combined with old wives tales, urban legends, information from friends in law enforcement, instruction by unscrupulous examiners, jailhouse "experts" and do-it-yourself techniques give the face of polygraph countermeasures many looks. They don't always conform to what we expect to see or are trained to look for during an examination. The prudent examiner should always be aware that the deceptive examinee is motivated to alter the outcome of the examination by whatever means possible and should be on the watch for anything that consistently deviates from the norm and/or appears at critical points on the charts.

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[1] The author is a member of the American Polygraph Association, and is in private practice. The opinions are those of the author, and do not necessarily represent those of Lafayette Instrument Company. These instructions are designed for the trained polygraph examiner, and are not a substitute for formal instruction at a school recognized by the American Polygraph Association, American Association of Police Polygraphists, or the National Polygraph Association. Suggestions and comments can be sent to rdrdak@gmail.com.

Most examiners are reporting that the current incidence of countermeasures is much higher than in previous years. Fortunately, many of these countermeasures are easily detected with a little guidance. Others can be identified only after undergoing specialized training. Still others can only be uncovered with the help of instrumentation and software.

This module is designed to help you to be proficient in the identification of the markers of countermeasures.

There are occasions when non-deceptive examinees will attempt some type of countermeasures to "help themselves" pass the examination; however, by far the best candidate for countermeasures is the person who intends to lie during the examination regarding the relevant issue. Therefore, it is important to make use of those tools we have at our disposal to assist us in identifying potentially deceptive examinees prior to chart collection – *foretold is forewarned.* By doing this we give ourselves a distinct advantage in identifying the countermeasures when they occur.

There are verbal and non-verbal cues commonly observed in examinees who prove to be deceptive. The examiner should be observant during the entire testing process for these non-chart related markers of deception:

- The examinee made an attempt(s) to avoid taking the polygraph examination
- The examinee was late arriving for the examination without a legitimate excuse
- The examinee tries to limit the length of the polygraph session
- The examinee expresses distrust or non-belief in polygraph
- The examinee tries to dominate the conversation and talks incessantly
- The examinee complains of some physical ailment or medical condition prior to being asked about his health and physical condition
- The examinee is quick to volunteer information regarding medications and then asks "will that effect the test"
- The examinee tries to oversell his honesty / truthfulness / character / reputation, etc.
- The examinee gives excuses why he might fail the examination
- The examinee's story is absurd, illogical or in direct conflict with case facts
- The examinee provides little details regarding critical parts of his story
- The examinee uses memory qualifiers to excess when answering questions
- The examinee answers relevant questions with half-truths

- The examinee minimizes the seriousness of the allegation / crime
- The examinee blames the person making the allegations or victim and provides reasons why he has been wrongfully accused
- The examinee avoids answering direct questions about the relevant issues with "yes" or "no" and provides evasive answers to those questions
- The examinee answers with a question
- The examinee tries to buy thinking time before answering relevant questions
- The examinee uses defensive statements when asked a direct question
- The examinee exhibits excessive physical indicators of unconscious stress relief such as yawning, stretching, knuckle cracking, throat clearing, sniffling, burping, etc.
- The examinee is "overly" anything
- The examinee deviates from his norm at critical times
- The examinee exhibits clusters of non-verbal cues
- The examinee makes small admissions designed to cloud the relevant issue
- The examinee exhibits an unusual interest or knowledge about polygraph

Using the following exemplars, the examiner can learn to recognize some of the more common tracing patterns associated with countermeasures.

Part of countermeasure detection is considering the context in which these anomalous patterns occur. Indicators do not mean the same thing under all circumstances. For example, a slow and flat cardiovascular tracing may mean that drugs are being used as a countermeasure, or it may only be that the examinee has a heart condition that is being medically controlled. Only a careful pretest interview will help sort out which is which. Movements recorded on the chart may be innocent in nature or part of a countermeasure strategy, depending on when they occur. Unusual patterns may be a manipulation by the examinee, instrument problems, or even generated by the examiner. This module will help you determine which is which.

Countermeasure signatures are organized here by the channel in which they appear: pneumograph, electrodermal, and cardiograph. Some countermeasures are detected by the co-occurrence of signatures in separate channels, and are found in the section titled Global Signatures. Some unusual tracing patterns may not be countermeasures after all, and here you will find a section, titled appropriately enough Not Countermeasures, is dedicated to those types of tracings. There is a discussion of the Yes Test, a method devised by the Reid school for countermeasure detection, and some Final Considerations are offered for other possible indicators of countermeasures.

Pneumograph Signatures

There are three types of pneumograph signatures found in this module: those that were done to mimic genuine responses, those that were an unintended consequence of countermeasure strategies, and those that attack tonic levels.

Authentic (no countermeasures) phasic responses in the pneumograph have a characteristic form. They almost all show a reduction in the amount of air being taken in. For example, there may be suppressions in the amplitude, reduction in the rate of breathing, temporary cessations of breathing, or a longer exhalation slope. There may also be a shift upwards in the baseline in the breathing. Below are some things to watch for in false phasic responses.

- Significant increase in the speed of breathing during a phasic response. This pattern runs counter to natural responding, and is almost always a countermeasure.

- Apneas that take place anywhere but at the baseline. Apneas that occur higher in the exhalation cycle are suspicious, and those that trail off below the baseline are also suspect.

Pneumograph signatures can also appear when the examinee is trying to do something not related to breathing. Here are some of the things to watch.

- The baselines of the upper and lower pneumograph tracings moving in opposite directions. This pattern is typically observed when the examinee has tightened muscles in the torso.

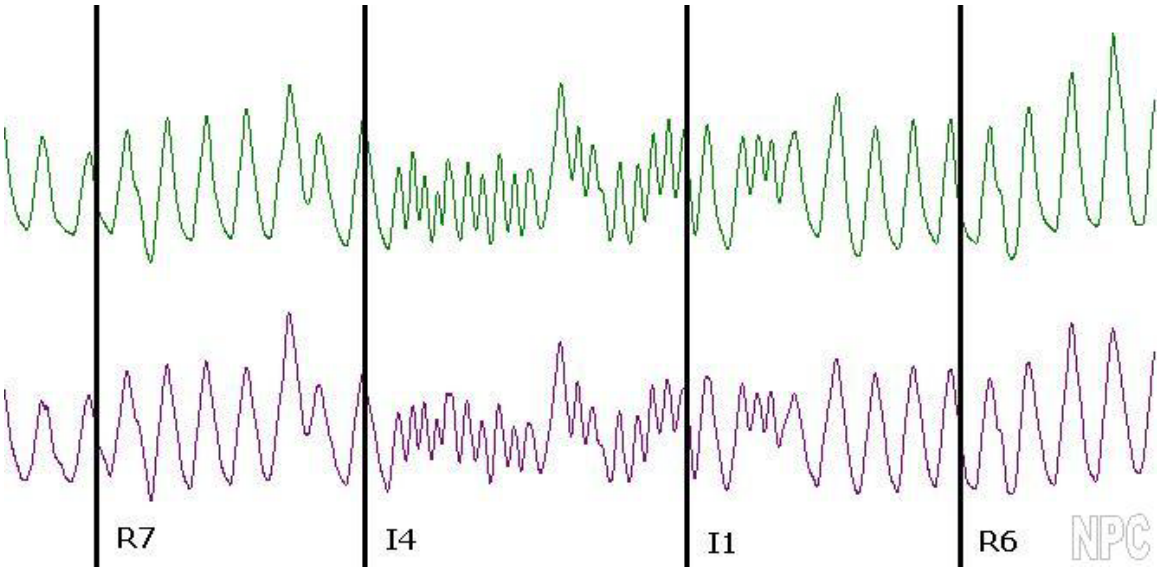
- A double answer response. This happens when the examinee is trying to covertly tighten muscles in order to create a reaction, but is unaware that this also creates a brief interruption in the normal flow of respiration.

Examinees may also try to manipulate the tonic respiration. Here are some indicators of false tonic respiration.

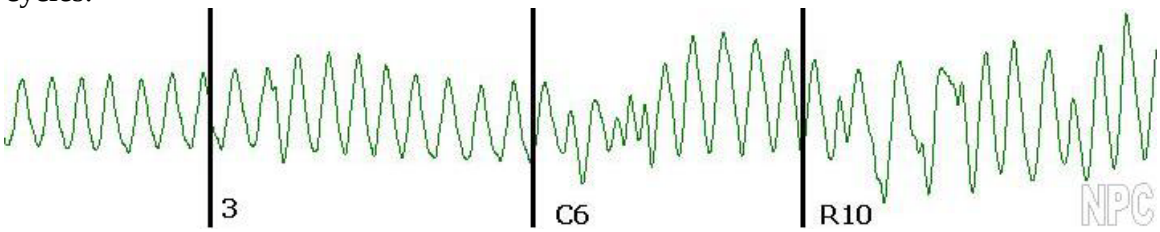
- Breathing that is below 10 cycles per minute (cpm) or faster than 22 cpm.

- Changes in breathing rate of more than 20% within a chart, or between charts, or between charts and surreptitious recordings of respiration. For example, if the tonic breathing rate had been 15 cpm, but increases to 20 cpm elsewhere in the recordings, there is cause to believe the examinee is trying to manipulate his respiration cycles.

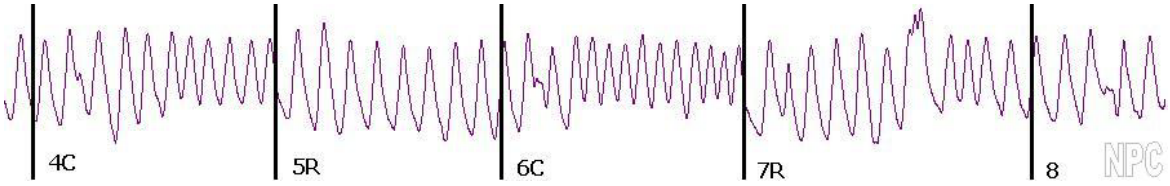
Exemplar P1. Dramatic increase in speed of breathing, targeting irrelevant questions.



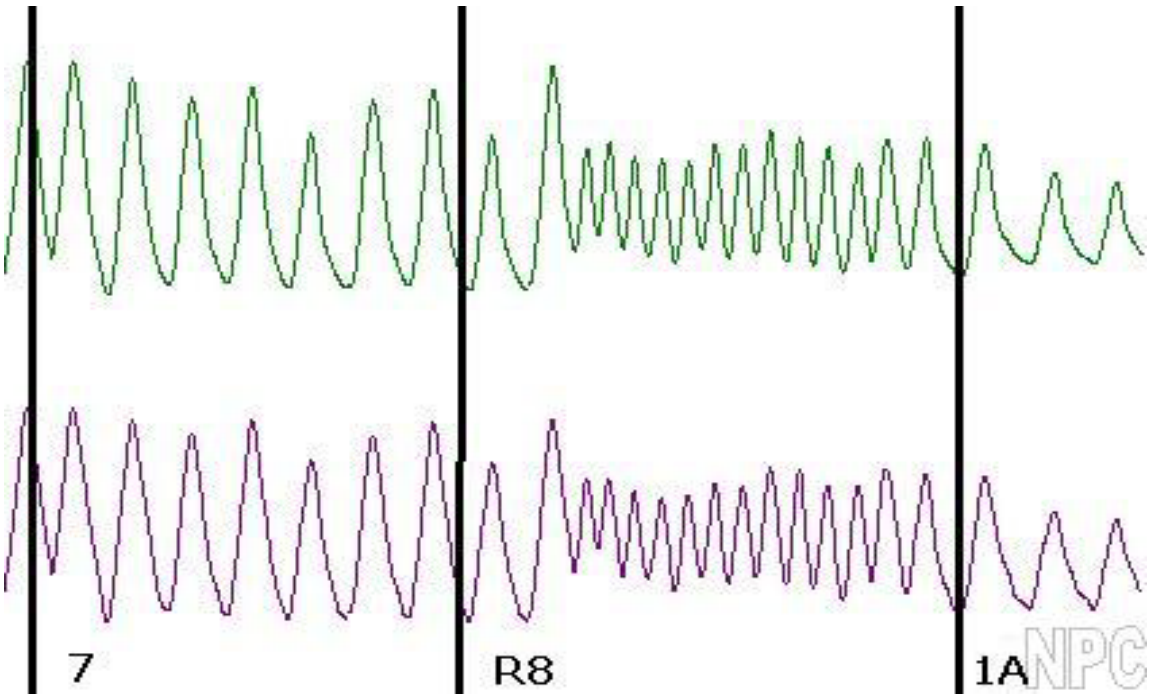
Exemplar P2a. False suppression. Note the increase in speed during the suppressed cycles.



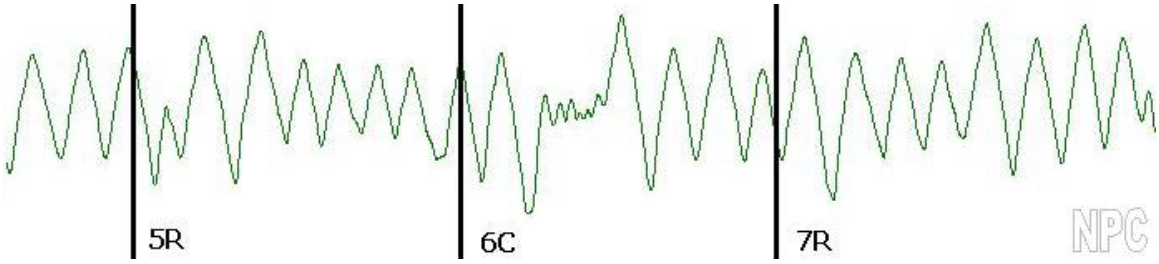
Exemplar P2b. False suppression. Note the increase in speed at 6C.



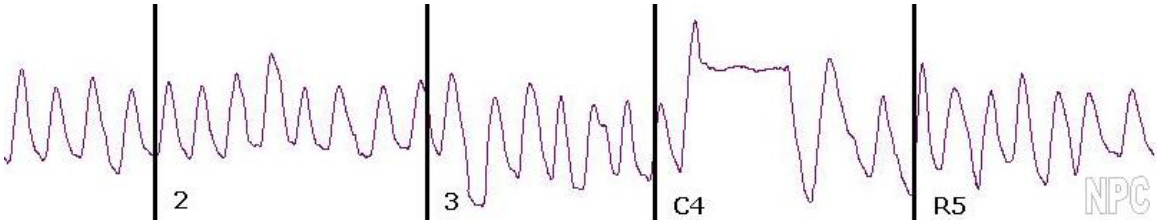
Exemplar P3. Unsophisticated attack against a relevant question.



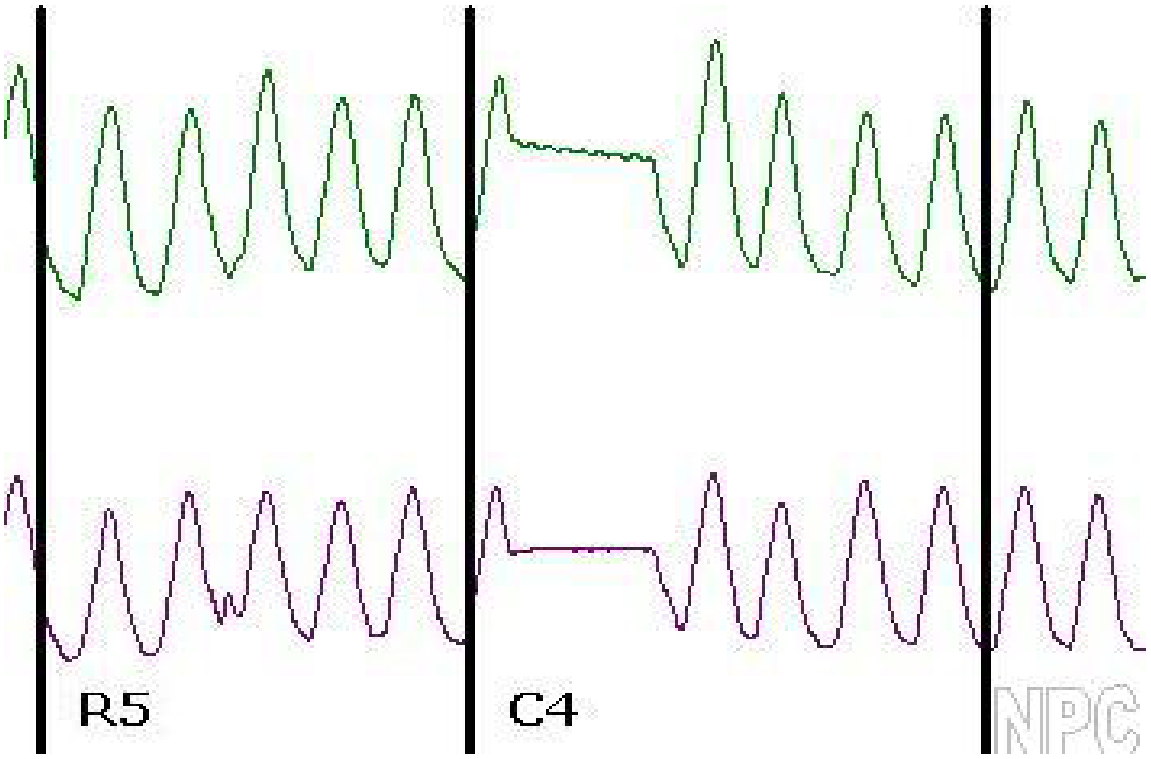
Exemplar P4a. Mid-cycle apnea. Note the instant recovery after the apnea on C6.



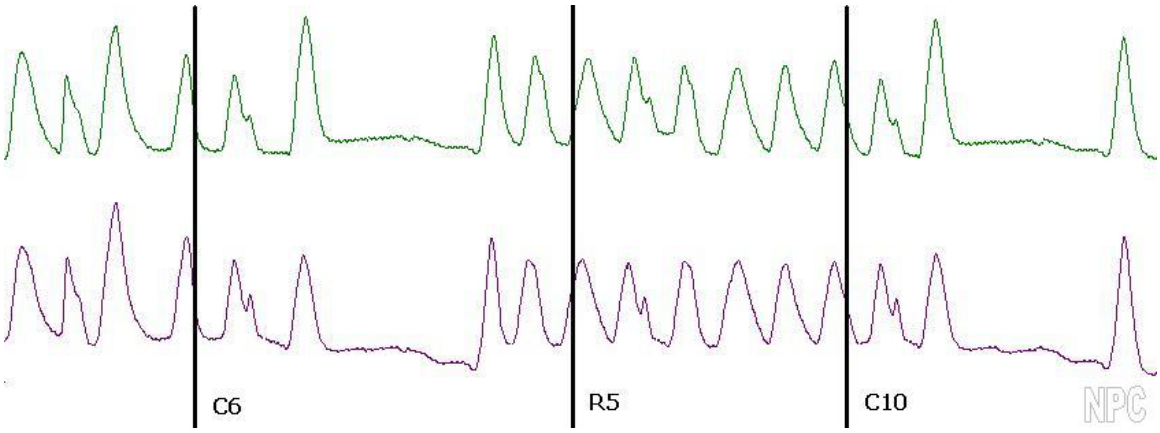
Exemplar P4b. Top-cycle apnea. Note the instant recovery after the apnea on C4.



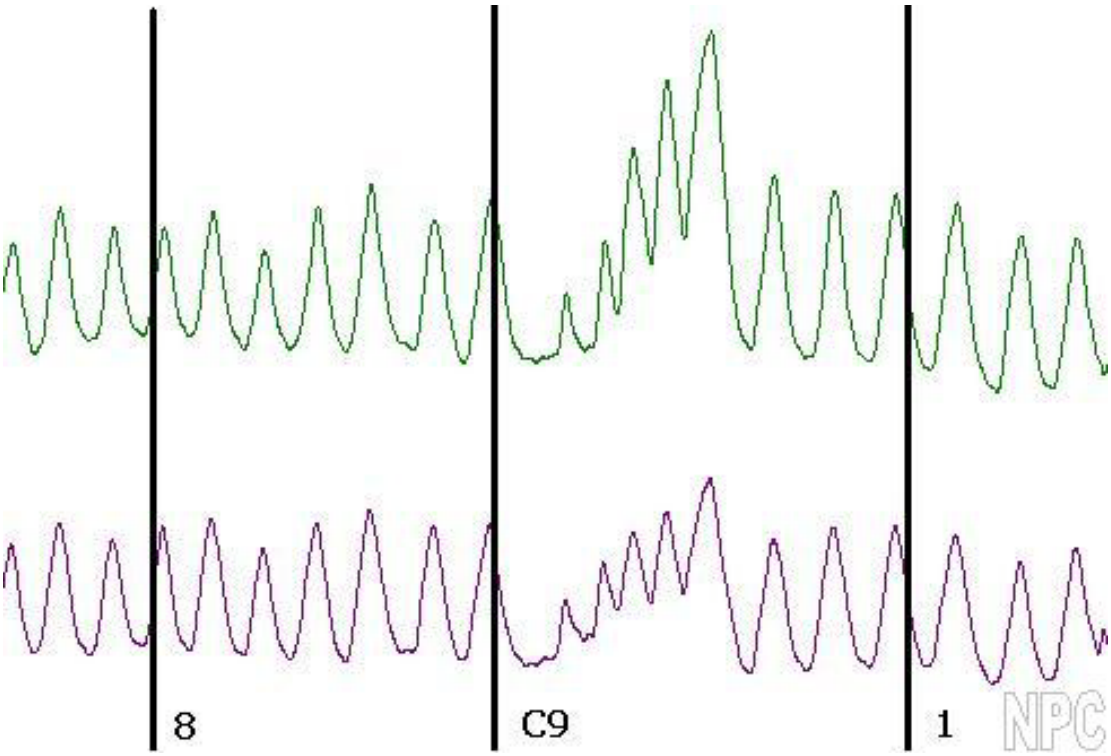
Exemplar P5. Mid-cycle apnea. Note also the instant recovery after C4.



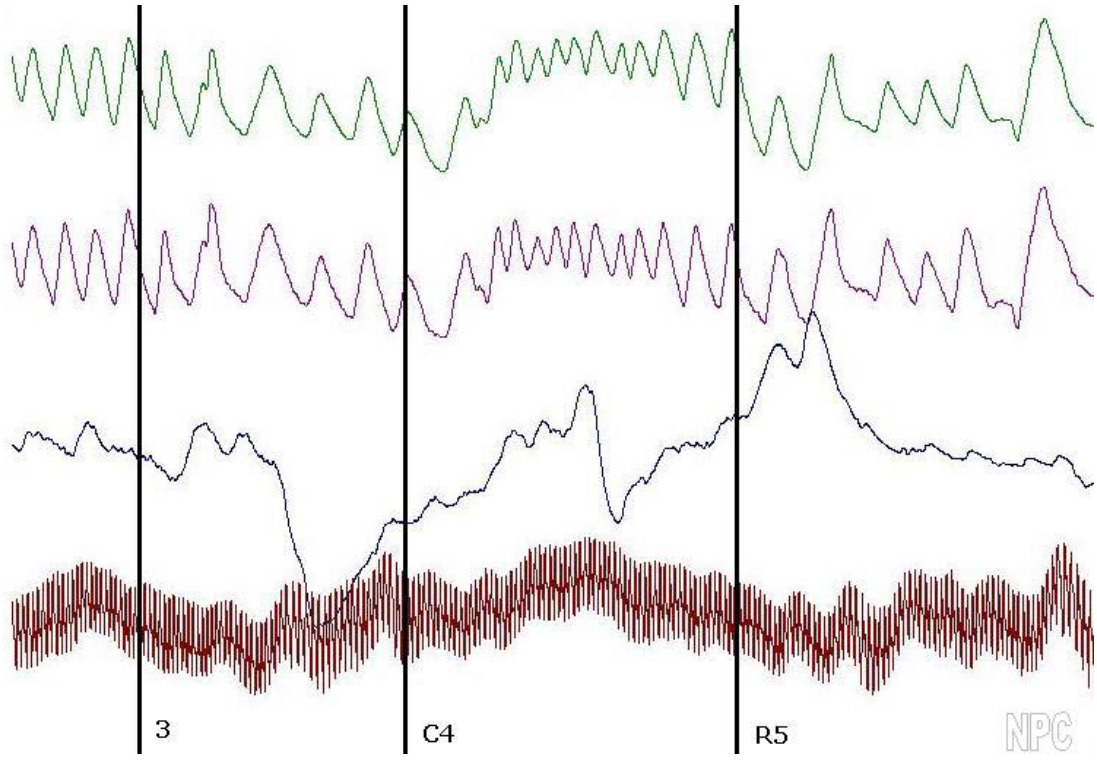
Exemplar P6. Apneas that drop below baseline. There are also virtually identical (cookie-cutter) patterns for C6 and C10, along with the instant recovery from the apnea.



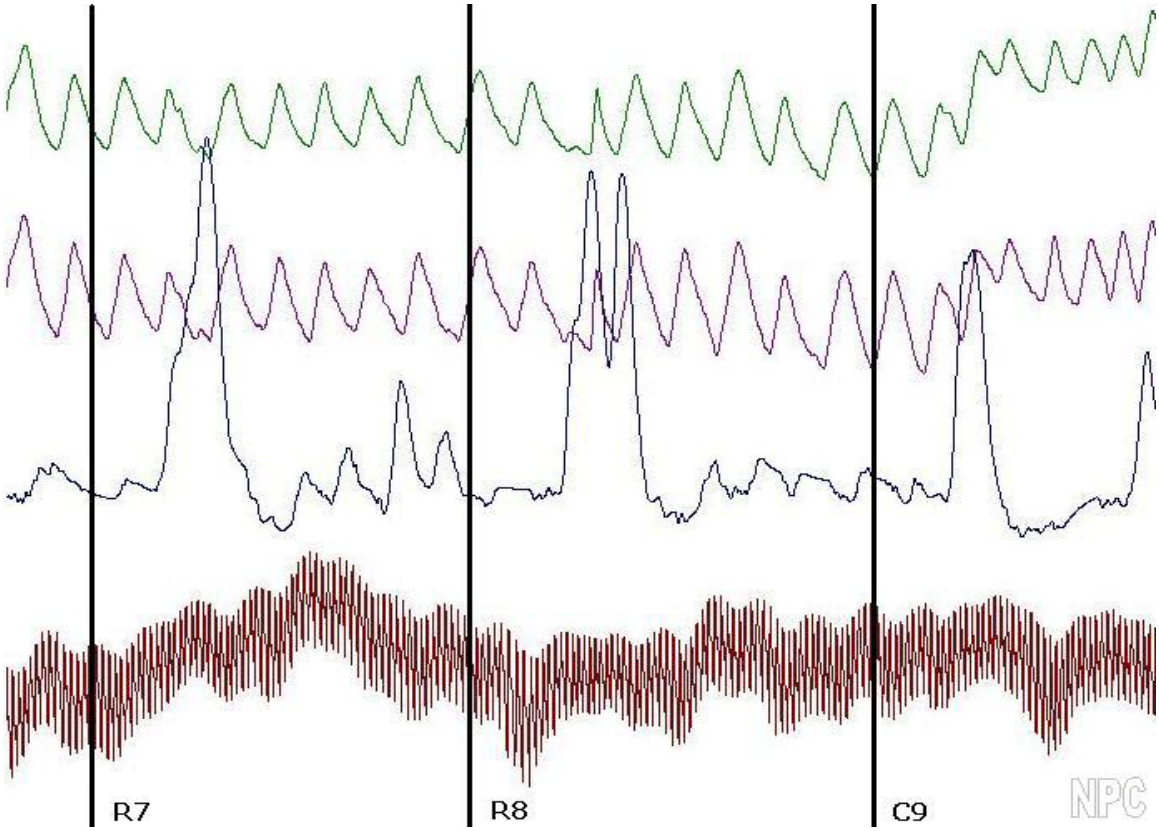
Exemplar P7. False baseline rise. Indicators are the increase in speed of breathing during the phasic response, coupled with the instant recovery.



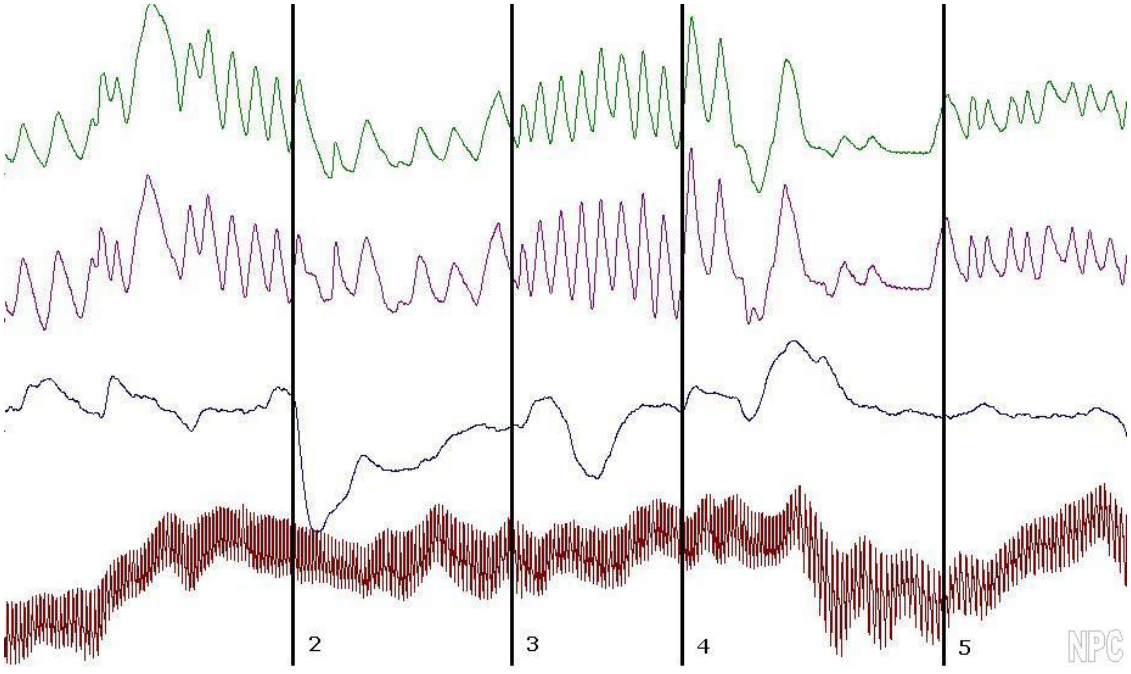
Exemplar P8. False baseline rise.



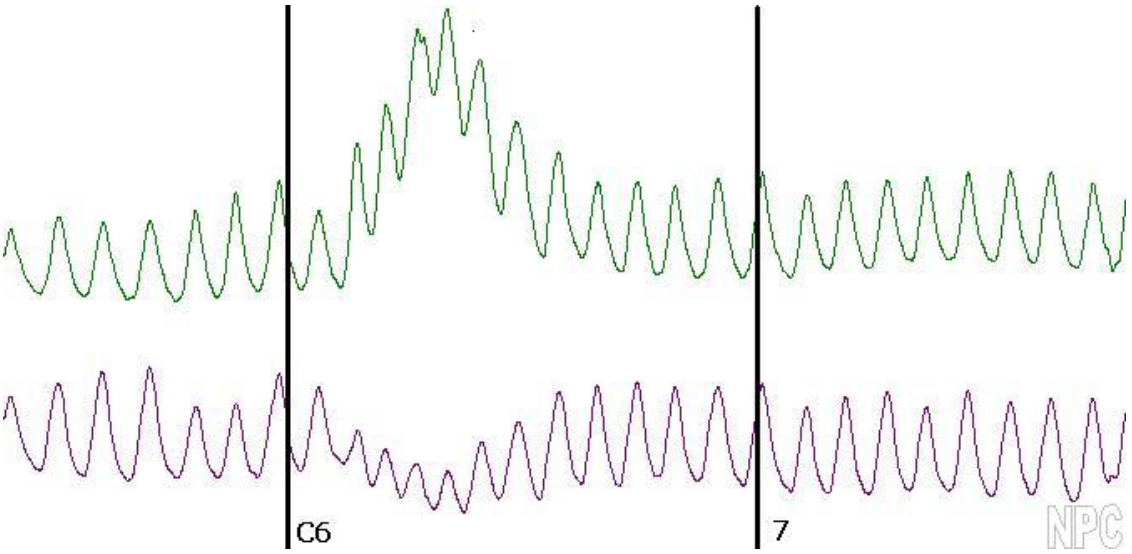
Exemplar P9. False baseline rise on C9. Note increase in breathing speed.



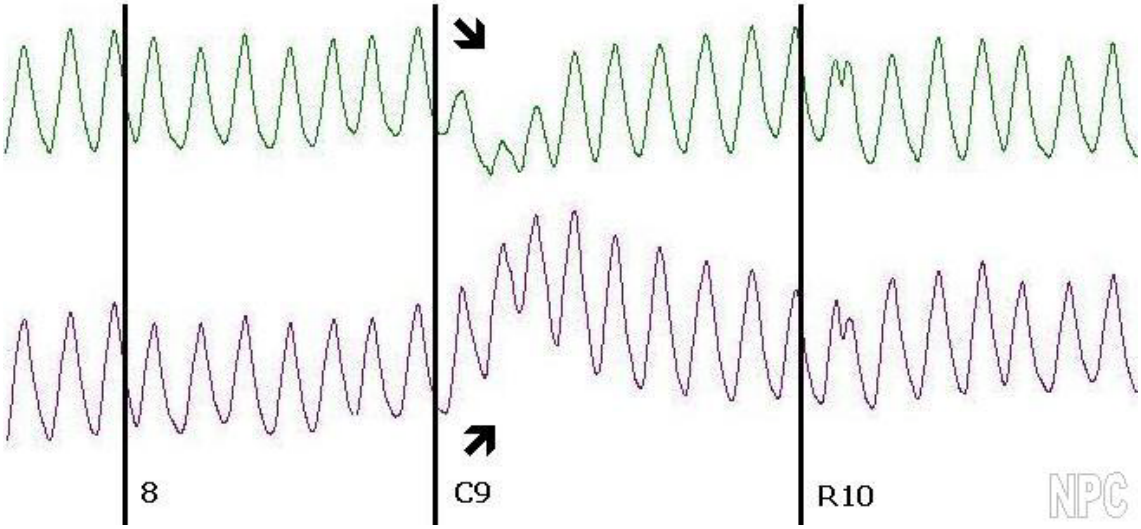
Exemplar P10. Alternate speed-breathing and slowed breathing.



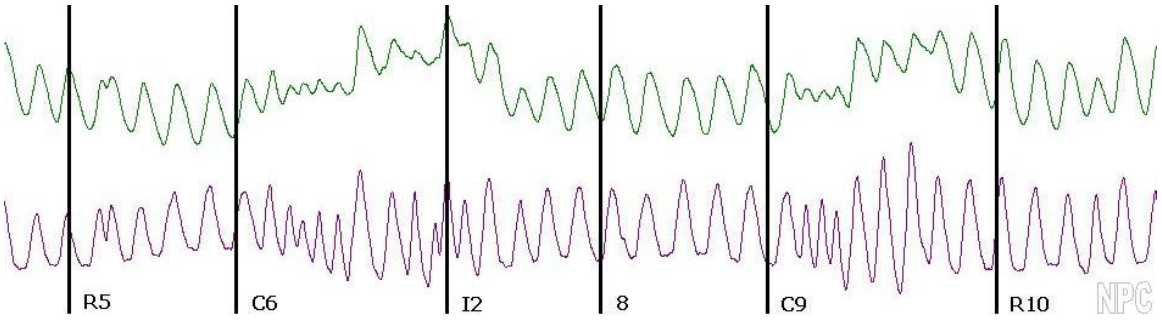
Exemplar P11. False baseline changes. This is an archetypal respiration pattern taking place when an examinee tightens muscles in the lower body, normally the anal sphincter. This action changes the circumference of the upper and lower torso differently, leading to the contrasting baselines in the two respiration channels. Respiration may become shallow, but it frequently increases in speed.



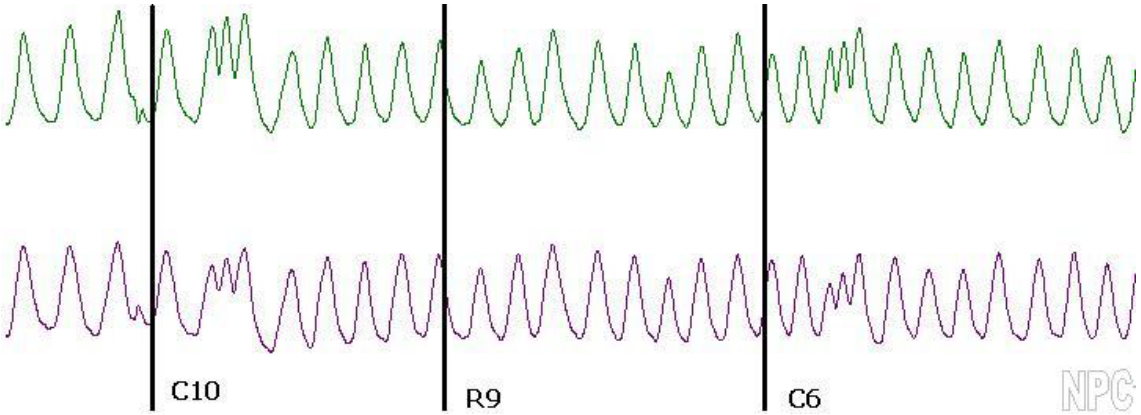
Exemplar P12. Contrasting baselines.



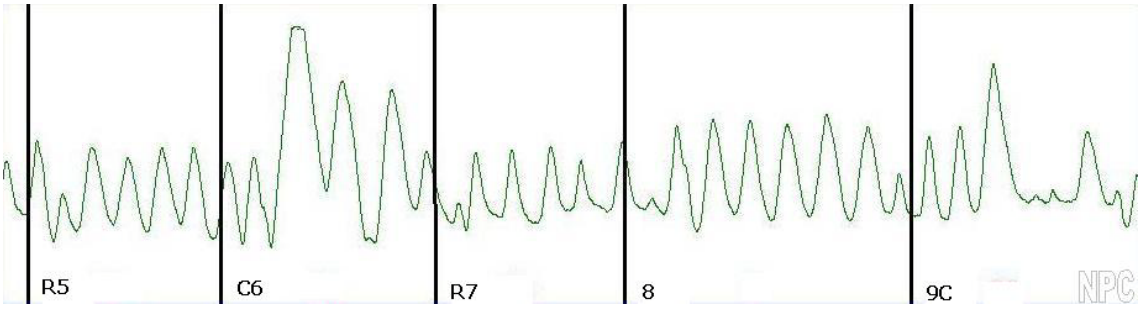
Exemplar P13. Contrasting baselines, with increase respiration speed.



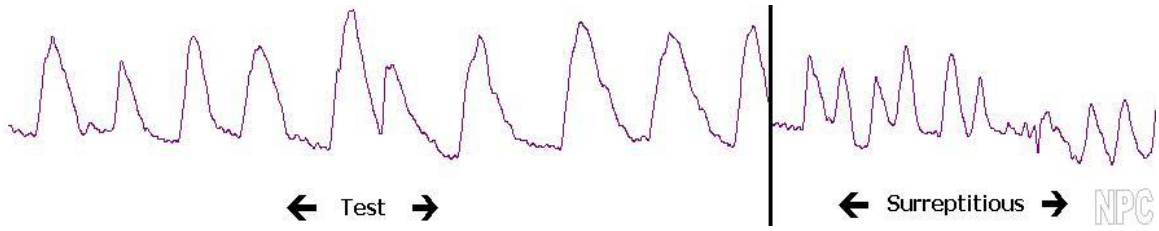
Exemplar P14. Double answer response. This pattern is caused when an examinee tightens muscles in the lower body to create a reaction. They unwittingly can cause what appears to be a double answer response when it occurs near the vocal answer.



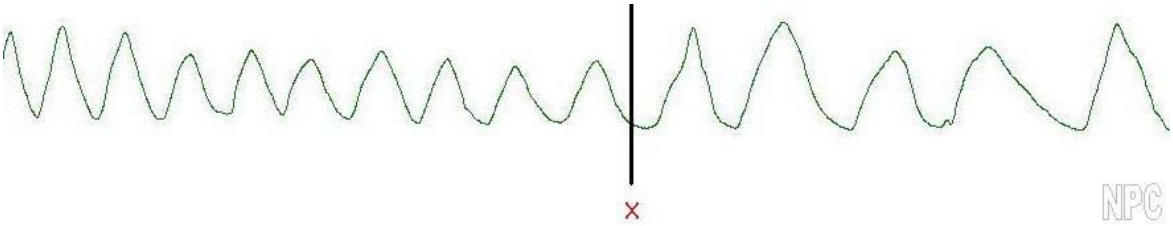
Exemplar P15. Taking deep breaths on comparison questions.



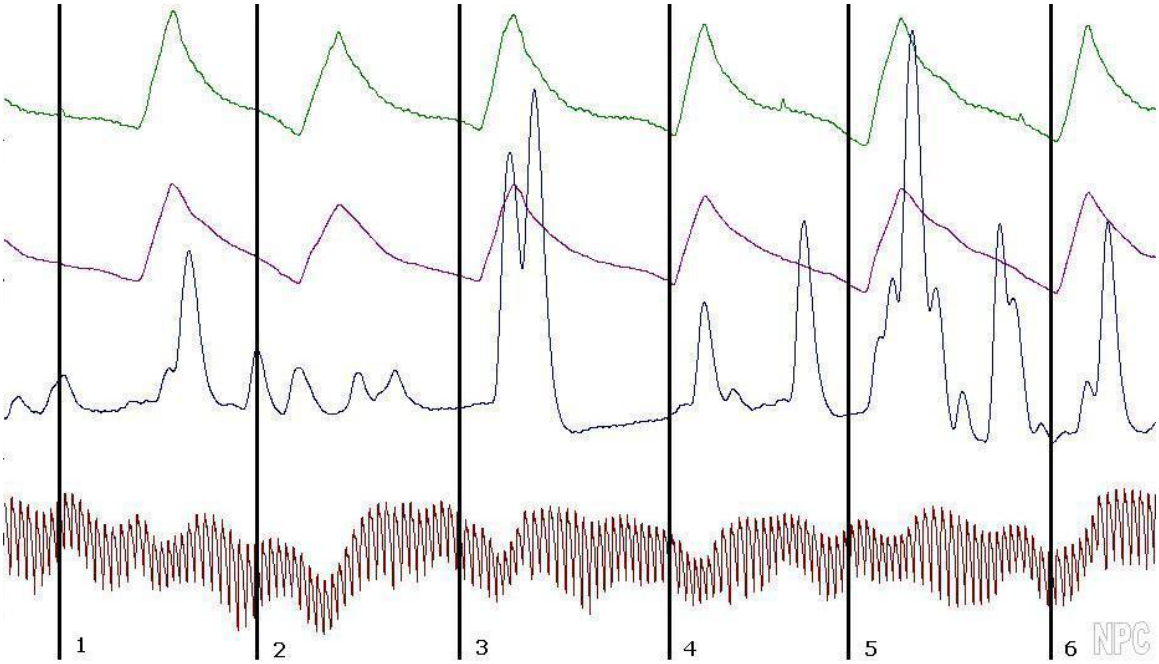
Exemplar P16a. Significant change in tonic breathing rate (>20%) between the test and a surreptitious recording.



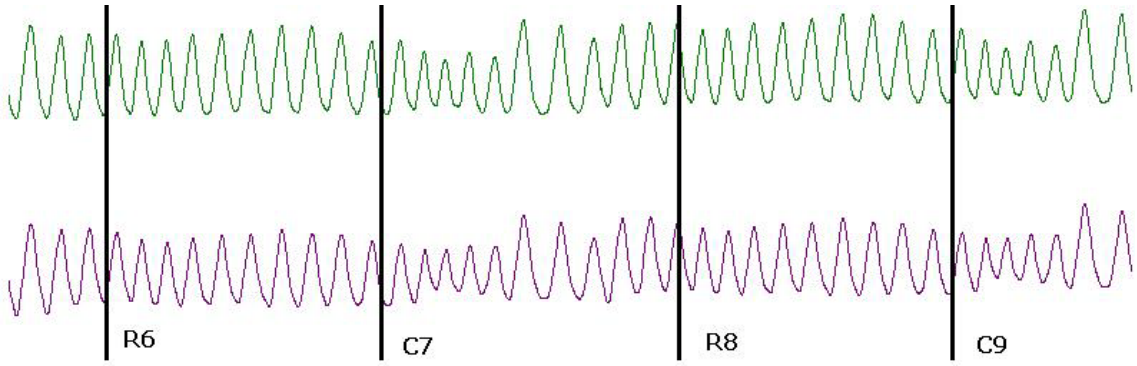
Exemplar 16b. Significant slowing in tonic respiration (>20%) at the announcement of the test beginning.



Exemplar P17. Excessively slow respiration (4 cpm).



Exemplar P18. Cookie-cutter. Examiners should be cautious when reactions on comparison questions appear highly similar to one another.

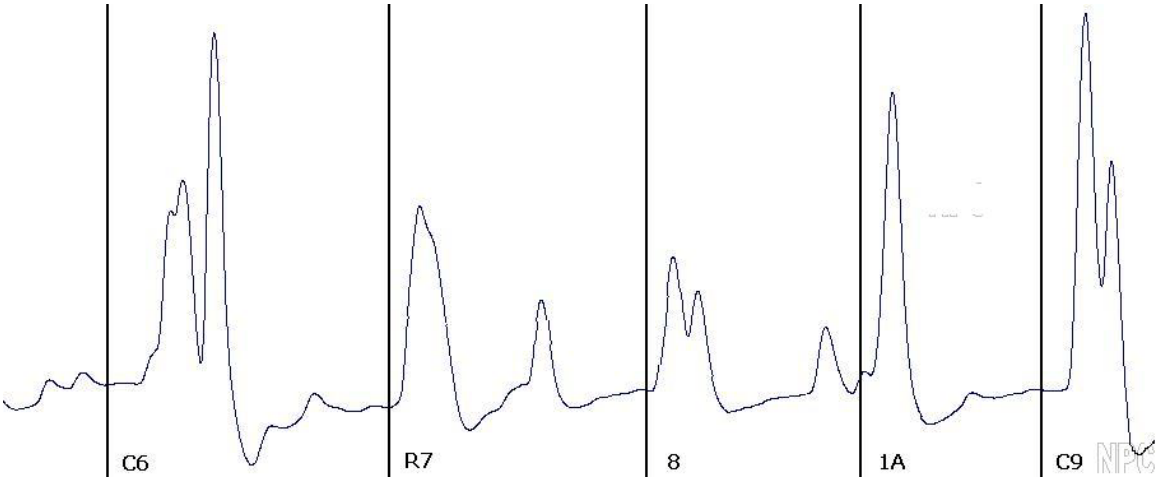


Electrodermal Signatures

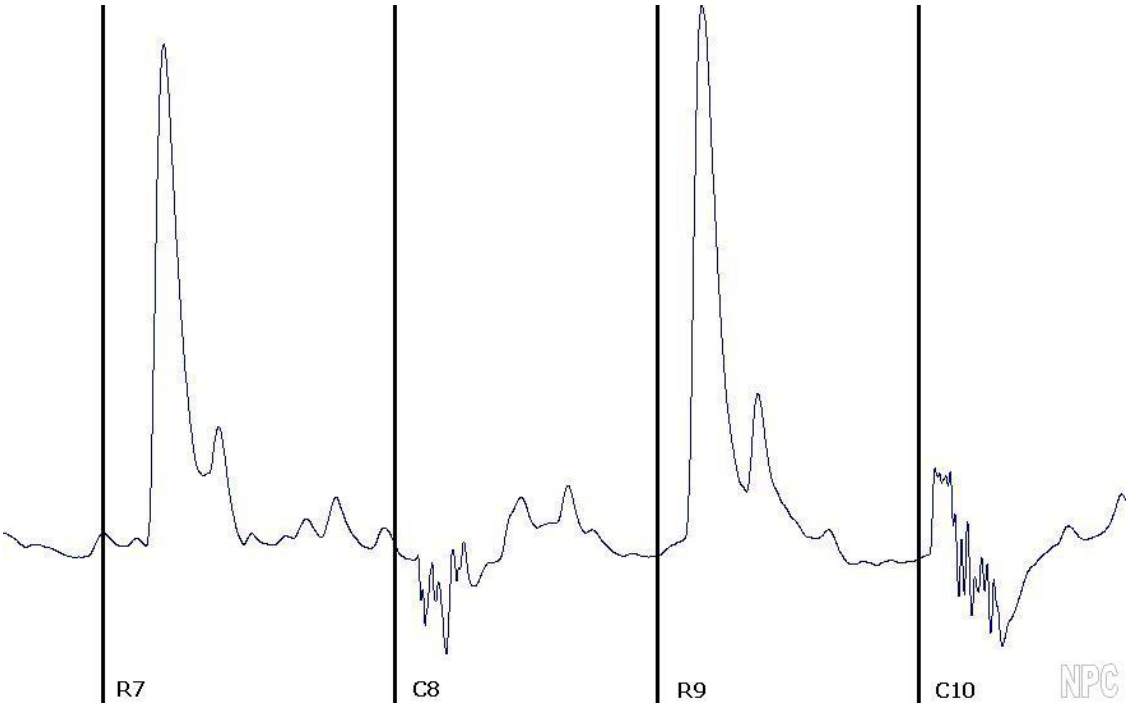
Detection of countermeasures in the electrodermal response (EDR) depends on two factors: latency and amplitude. Latency in the present context refers to the time lag between the start of the test question and the start of the electrodermal response. Normal human electrodermal activity cannot have latencies less than 0.5 seconds, though they can extend to 8 seconds or more for certain rare individuals. Typically, responses are initiated within 0.5 to 5 seconds. Individuals tend to have somewhat similar latencies for all questions. For example, if EDRs to the relevant questions begin about 2 seconds after the start of the test question for a particular examinee, EDRs to the comparison questions should be fairly close to that latency, too. Significant departures from this latency rule are cause for concern. It is worthwhile to remember that examinees tend to produce EDRs to the presentation of the test question, not to their act of lying. Consequently, examinees should recognize the test questions you reviewed with them within a second or two after you start reading it, and respond accordingly. Very long latencies just on certain types of questions should be a flag to the examiner.

In terms of amplitude, reactions to comparison questions rarely exceed a ratio of 5-to-1 over the reactions to relevant questions. If exceptionally strong EDRs are repeatedly happening in a set of charts to one or more comparison questions, it becomes more likely that the EDRs are being manufactured deliberately by the examinee. Ensure that the examinee is not self-stimulating pain on the comparison questions, as this is one of the more common generators of exaggerated reactions to comparison questions. Another sign is the complex waveform on comparison questions. If there are multiple peaks in an EDR to a comparison question, one should be aware that this is not often seen with real EDRs on comparison questions of truthful examinees.

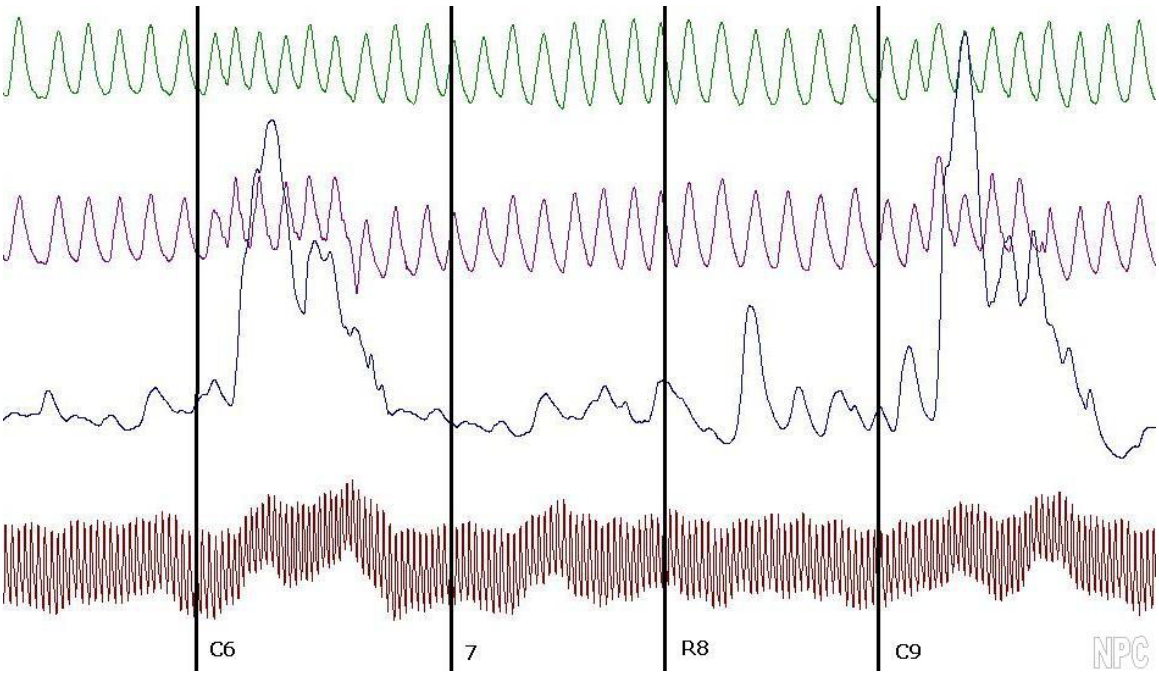
Exemplar E1. Suspiciously long EDR latencies on comparison questions. Also note the multiple EDRs to the comparison questions.



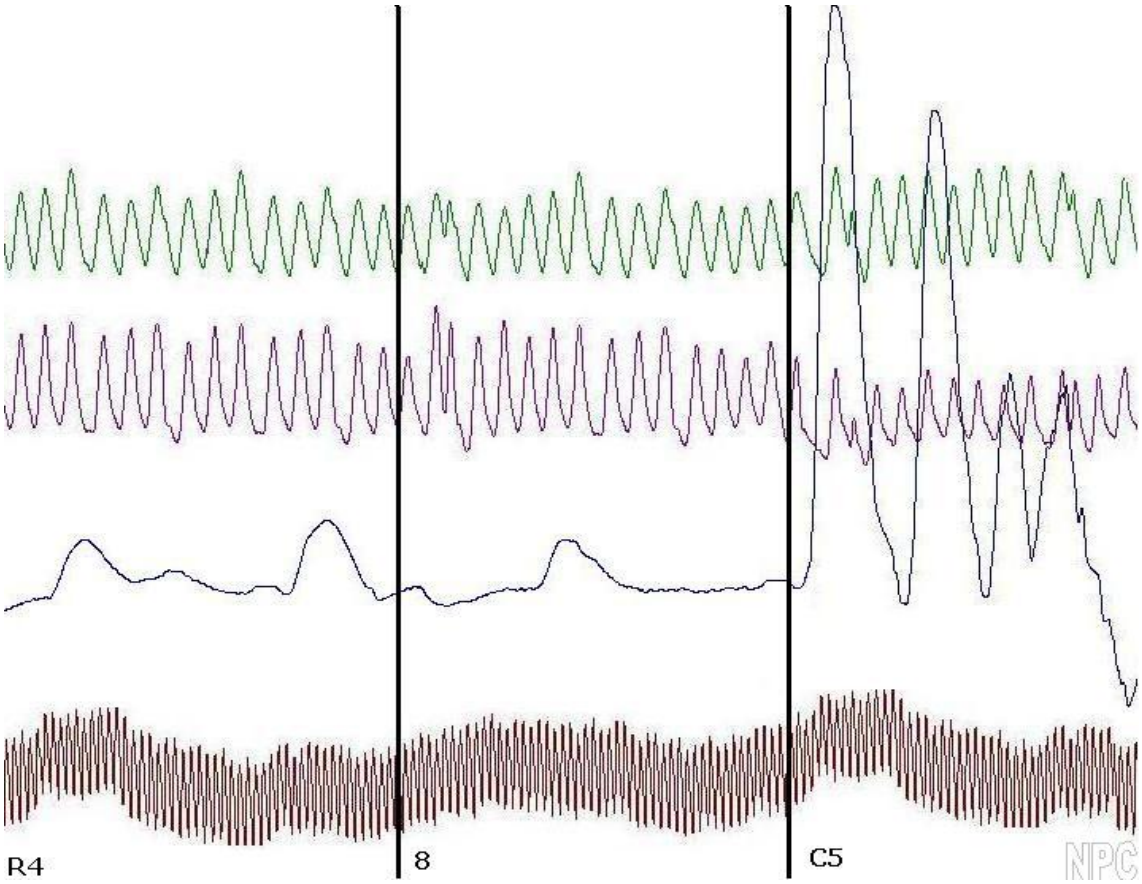
Exemplar E2. Movement of fingers at the comparison questions. While these distortions can be caused by instrument problems, it is unlikely that one would have instrument problems exclusively on comparison questions.



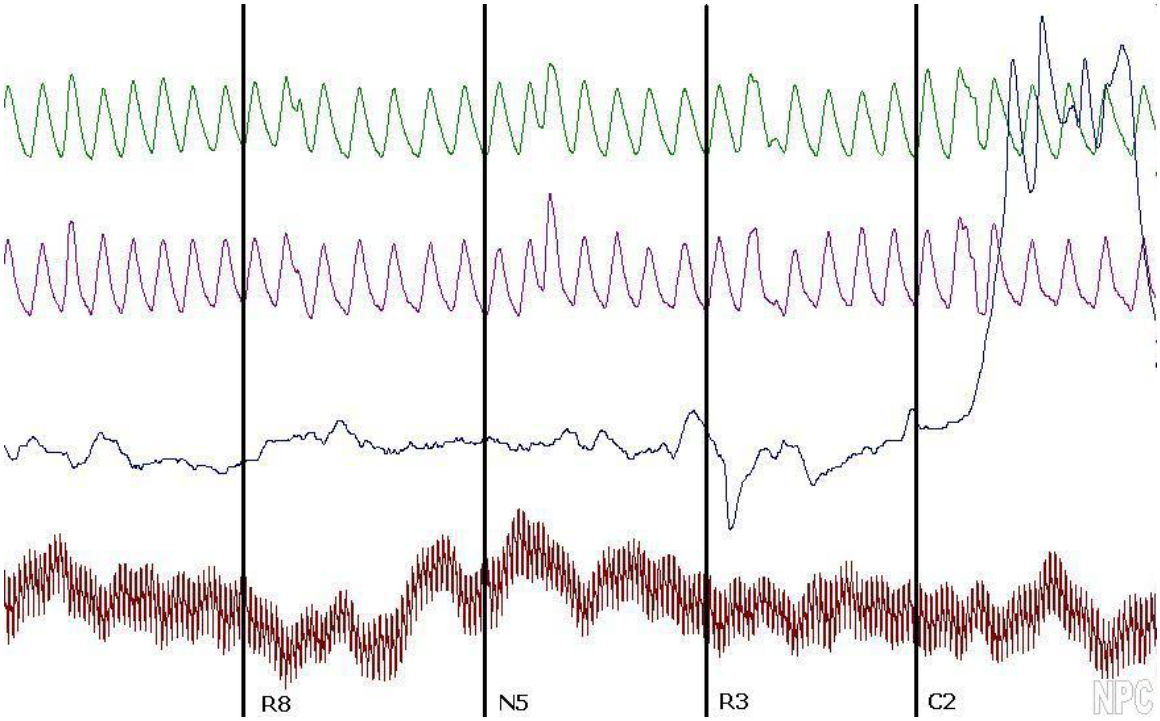
Exemplar E3. Exaggerated EDRs on CQs. Other indicators include the multiple EDRs, increased respiration speed and double cardiovascular responses at the CQs.



Exemplar E4. Exaggerated EDRs on comparison questions. Other indicators are the multiple EDRs.



Exemplar E5. Exaggerated EDR on C2. Also note the multiple peaks in that channel.



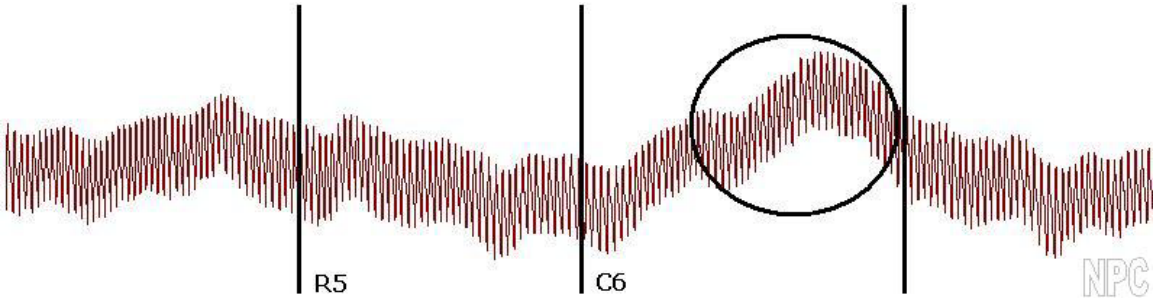
Cardiograph Signatures

As has been stated earlier, creating reactions is fairly straightforward. However, creating signature-free reactions is something that cannot be taught on the Internet. The following pages show the countermeasure signatures of the cardiograph channel.

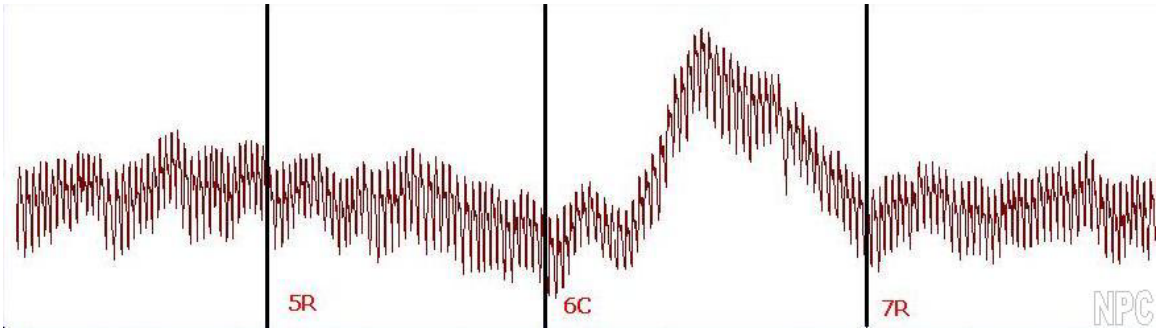
One guiding principle for examiners to keep in mind is that truthful examinees do not normally produce exceptionally large reactions on probable-lie comparison questions. This is one of the important keys to detecting countermeasures in this channel. Deceptive examinees expect to react to relevant questions, and so they try to ramp up their reactions to comparison questions to fool the examiner, usually overdoing it. Here are some of the signatures that related to the comparison questions.

- A double phasic response on a comparison question.
- A very steep slope at the beginning of the cardiovascular response.
- Reactions that last 20 – 30 seconds, or more.
- Noticeable reactions on the relevant questions, combined with huge reactions to comparison questions.
- Delayed latencies, if the countermeasure is timed to the examinee's answer instead of question recognition.

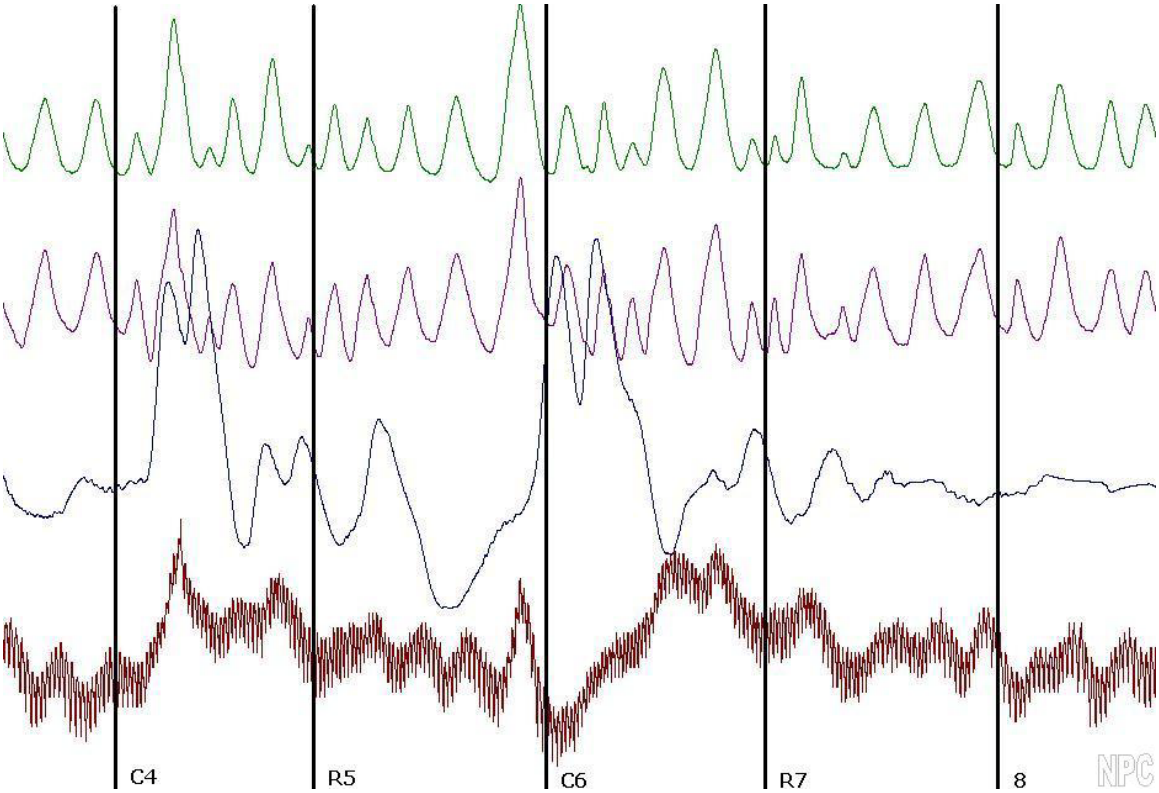
Exemplar C1a. Double response. This is the classic pattern of the cardiovascular response evoked by toe pressing, or tightening of the anal sphincter.



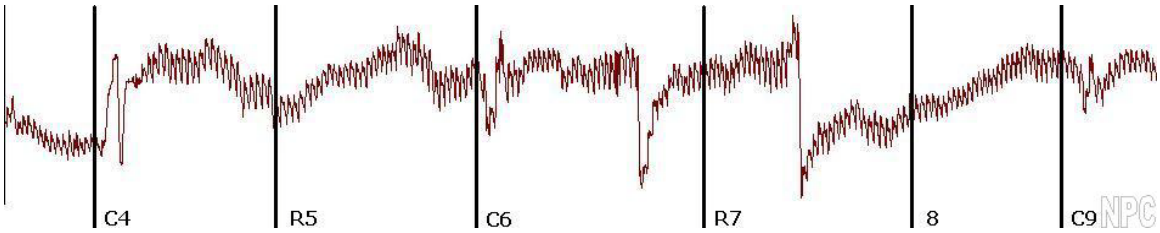
Exemplar C1b. Double response, combined with steep rise.



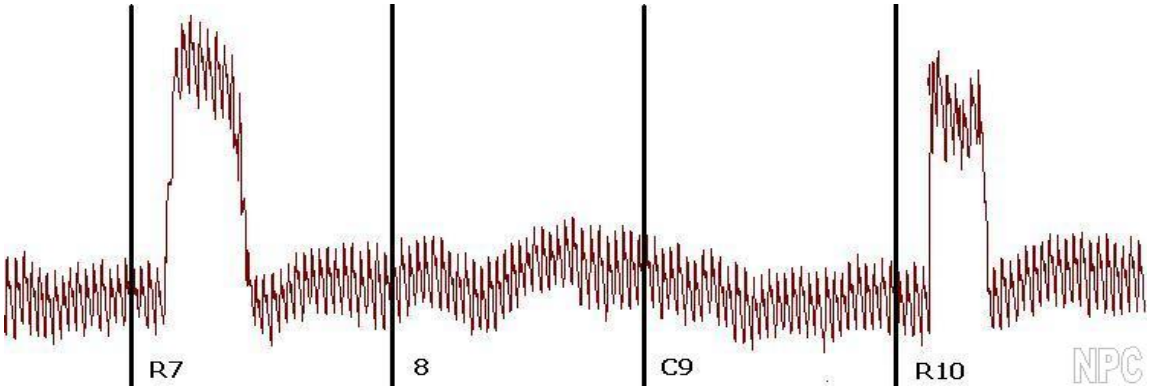
Exemplar C2. Very steep beginning slope to the cardiovascular response.



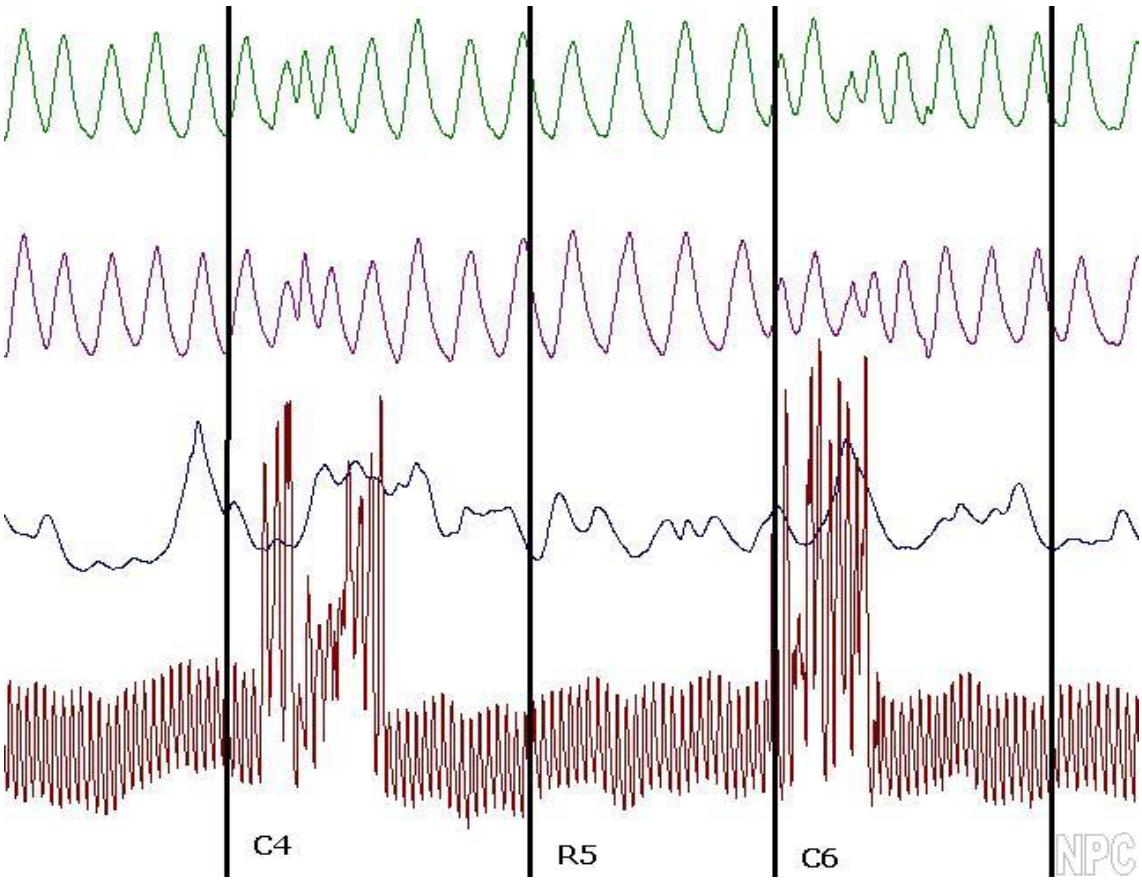
Exemplar C3a. Random movements. This is one of the more easily recognized countermeasure strategies.



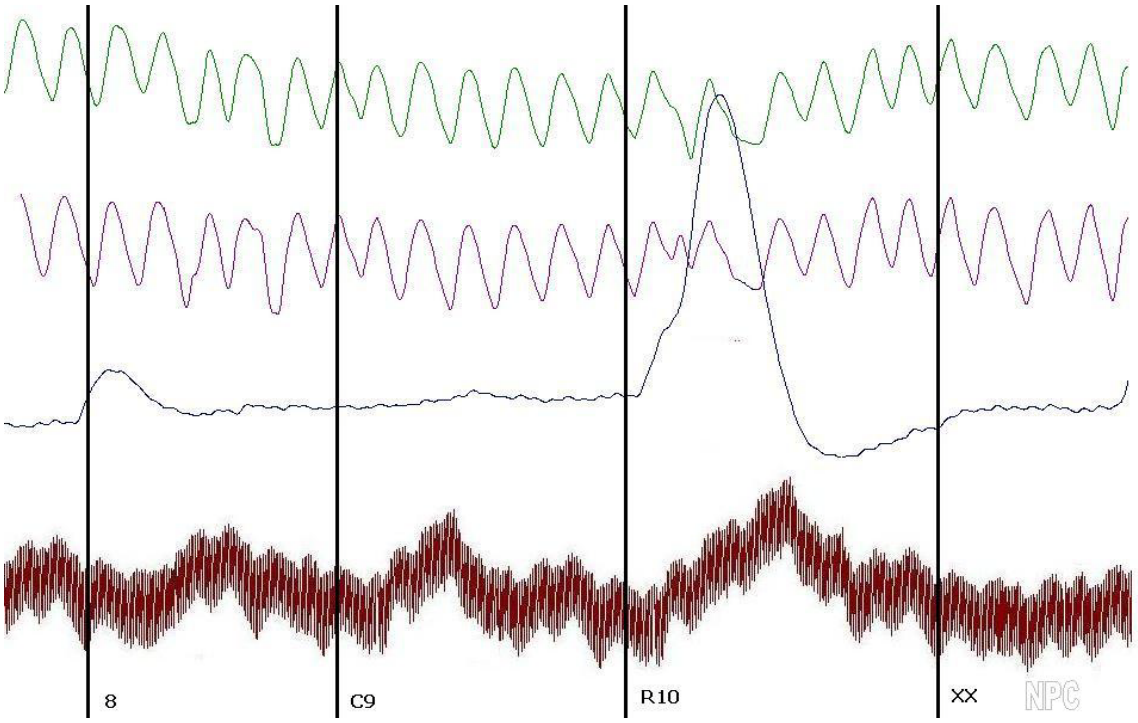
Exemplar C3b. Targeted movements. Unsophisticated strategy of moving on relevant questions.



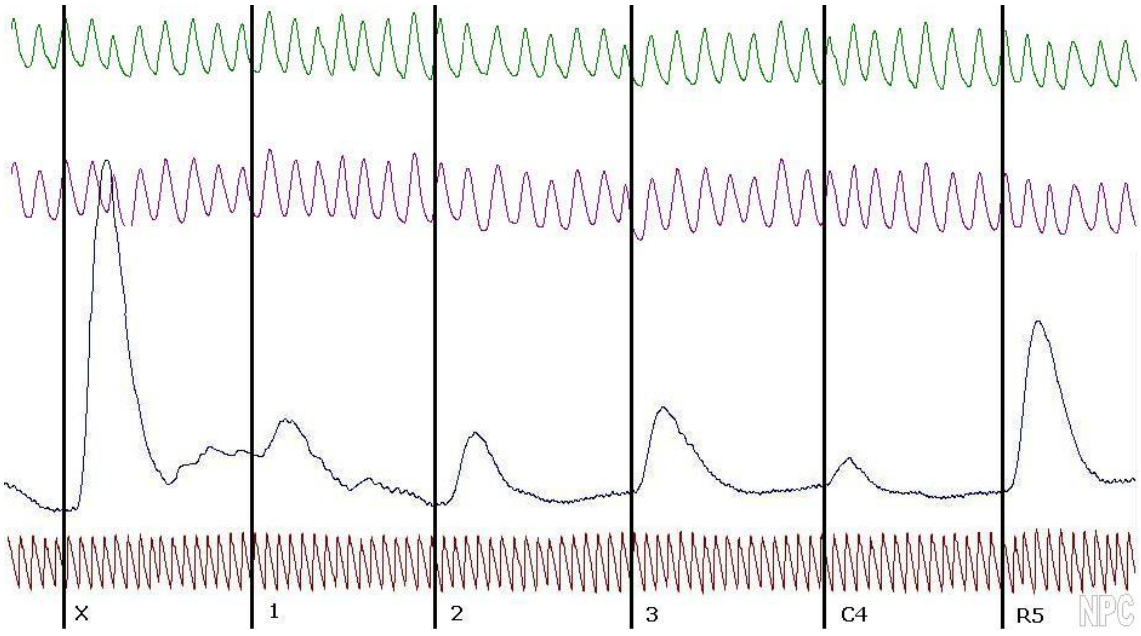
Exemplar C4. Targeted movements on comparison questions.



Exemplar C5. Tachycardia. Pulse rate elevated by amphetamines. Examiners should become more wary as the pulse rate begins to exceed 100 beats per minute.



Exemplar C6. Bradycardia. Extremely slow pulse and flat blood volume dynamics brought about by use of betablockers. This may not be a countermeasure if the examinee is normally prescribed the medication.

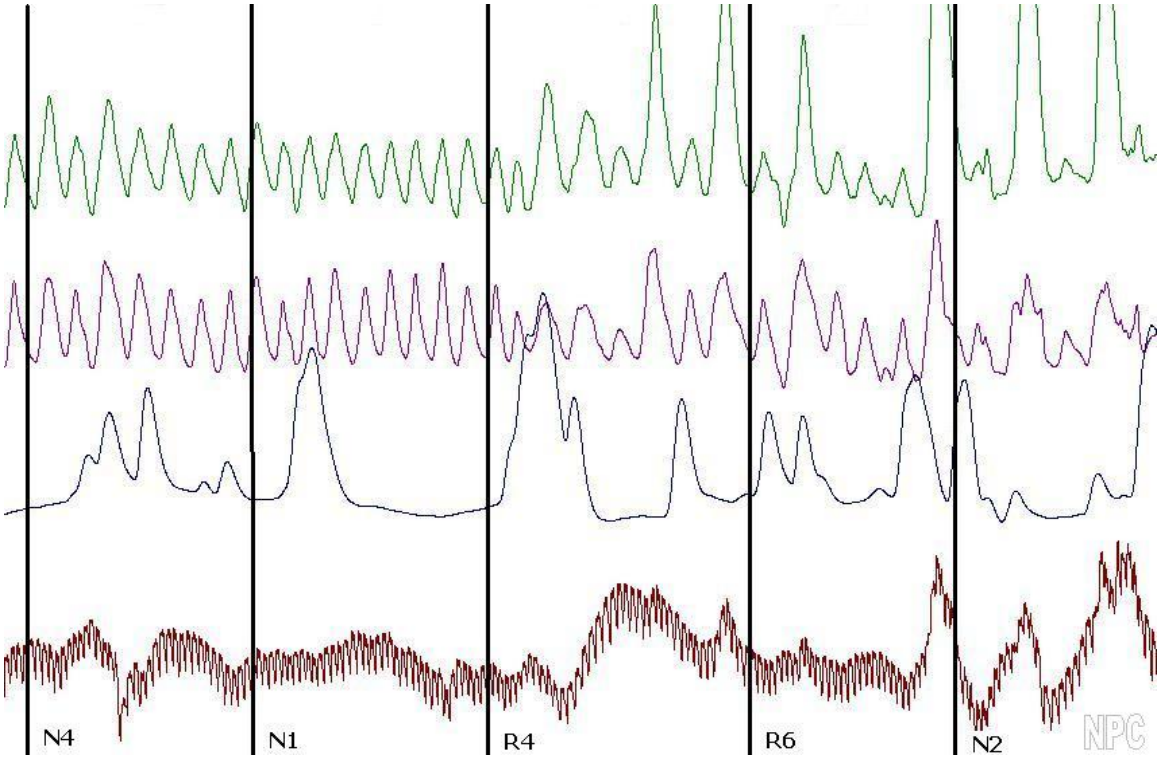


Global Signatures

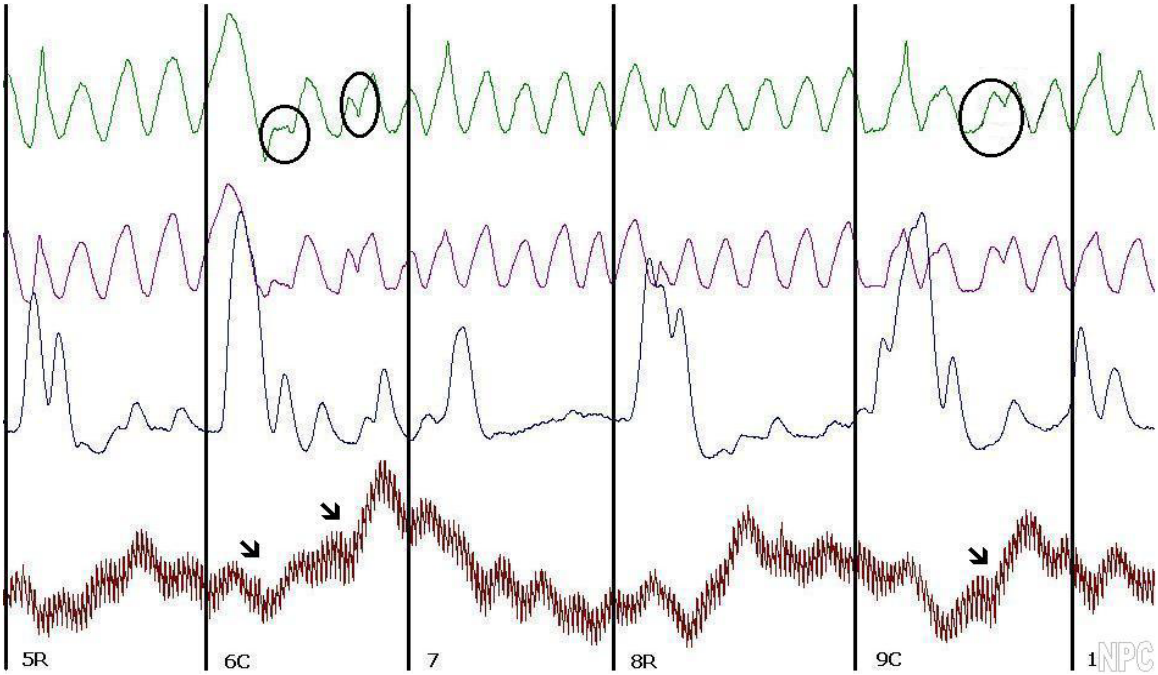
Often a global assessment of the charts is useful in determining the type of countermeasure strategy an examinee is trying. It is instructive to look at the reactions to the relevant questions first, to determine whether there are significant responses there. If there are, it may not matter how large the reactions to the comparison questions are. Likewise, if the reactions to the comparison questions are highly similar to one another in profile, this should be considered anomalous.

The following is a collection of entire chart segments. The purpose of these segments is to show the interrelationship between responses in different channels, and the pattern of responses among question types.

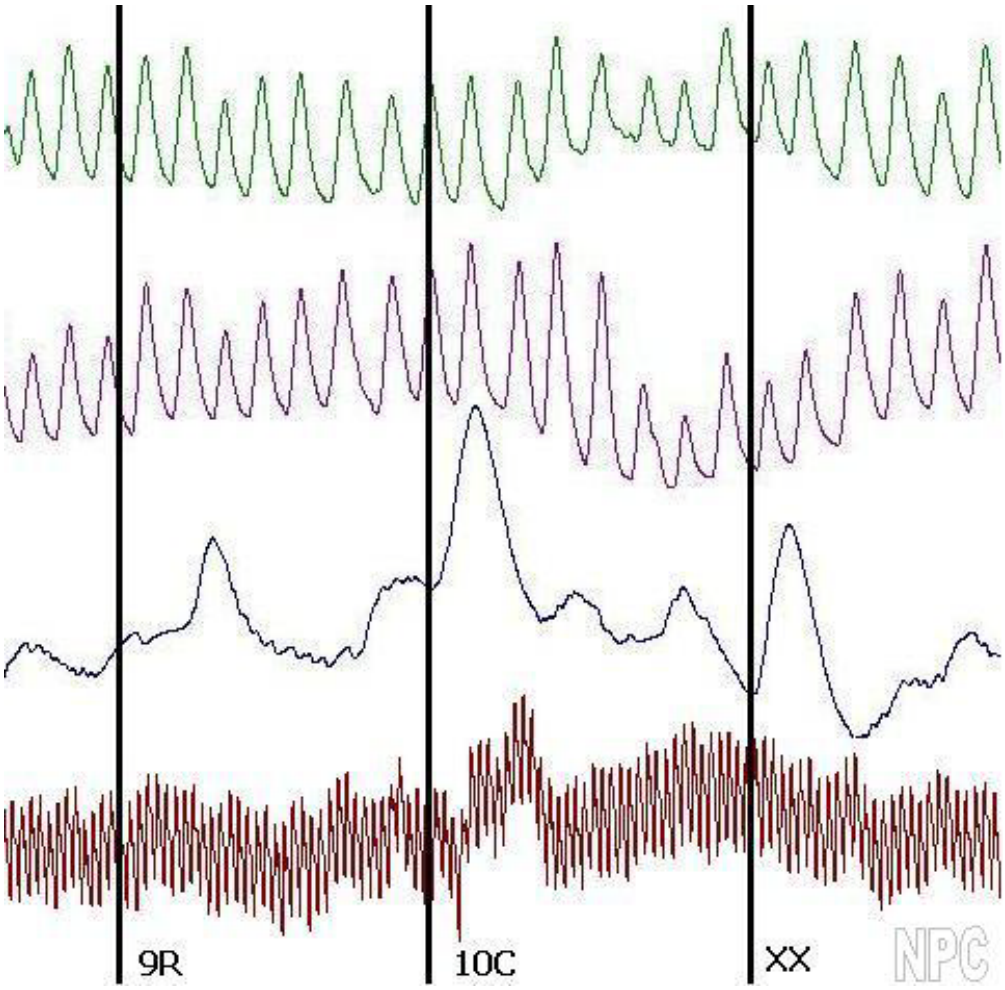
Exemplar G1. Dramatic change in tonic activity beginning with the first relevant question.



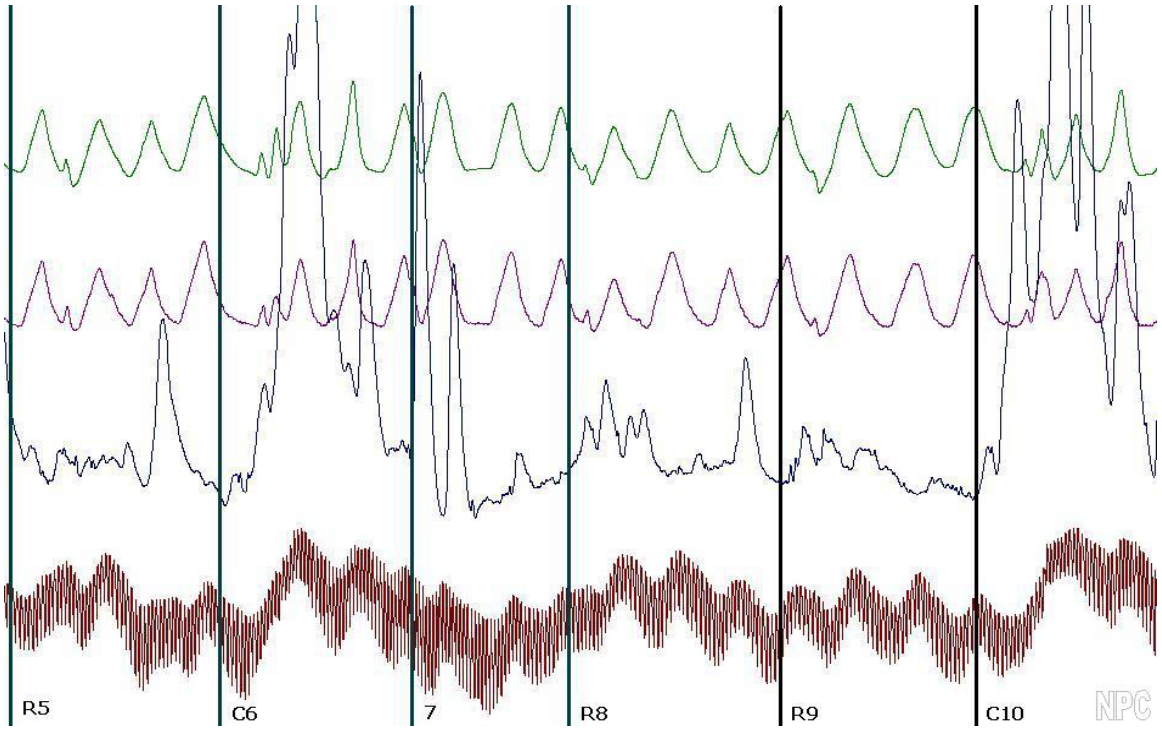
Exemplar G2. Signature pattern of an examinee using a tightened anal sphincter to evoke reactions. Note the double responses in the pneumograph associated time-wise with sharp rises in the cardiograph tracing.



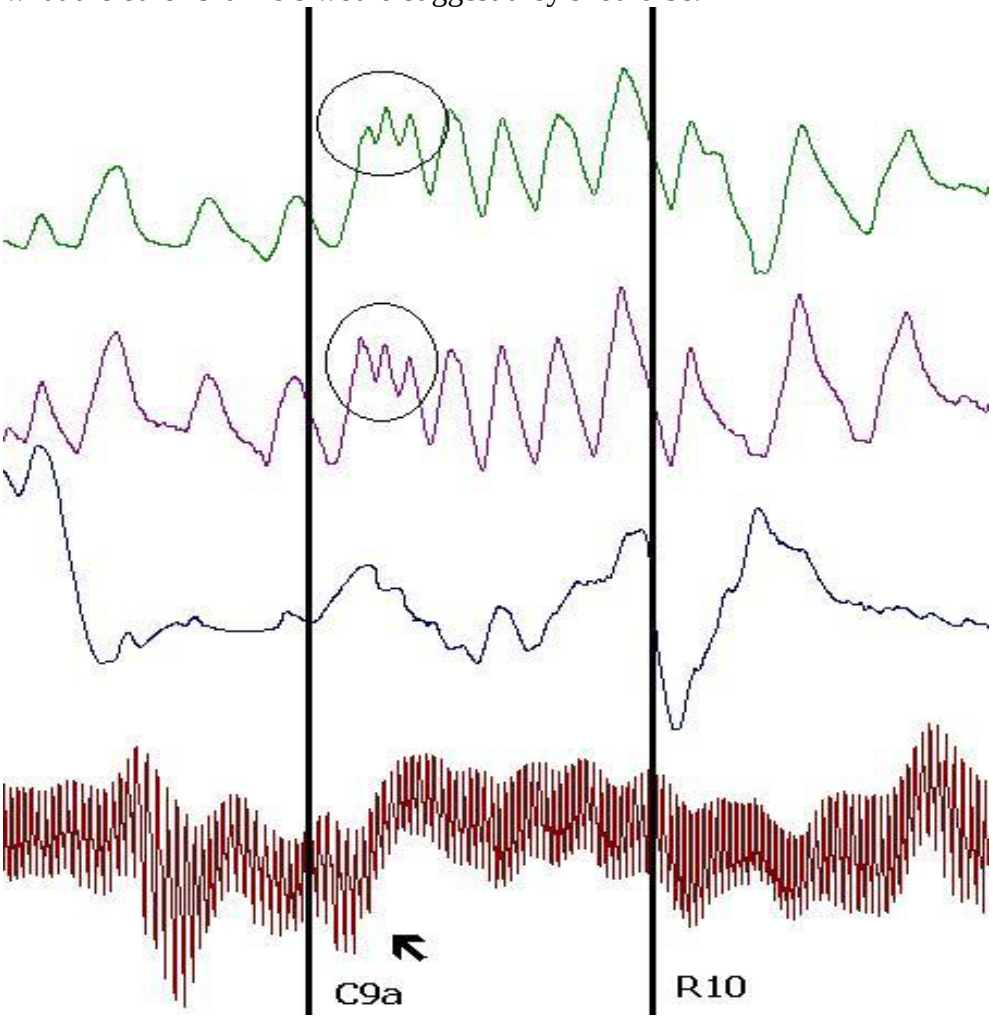
Exemplar G3. Tightened anal sphincter. Contrasting pneumograph baselines co-occurring with a sharp rise in the cardiograph tracing.



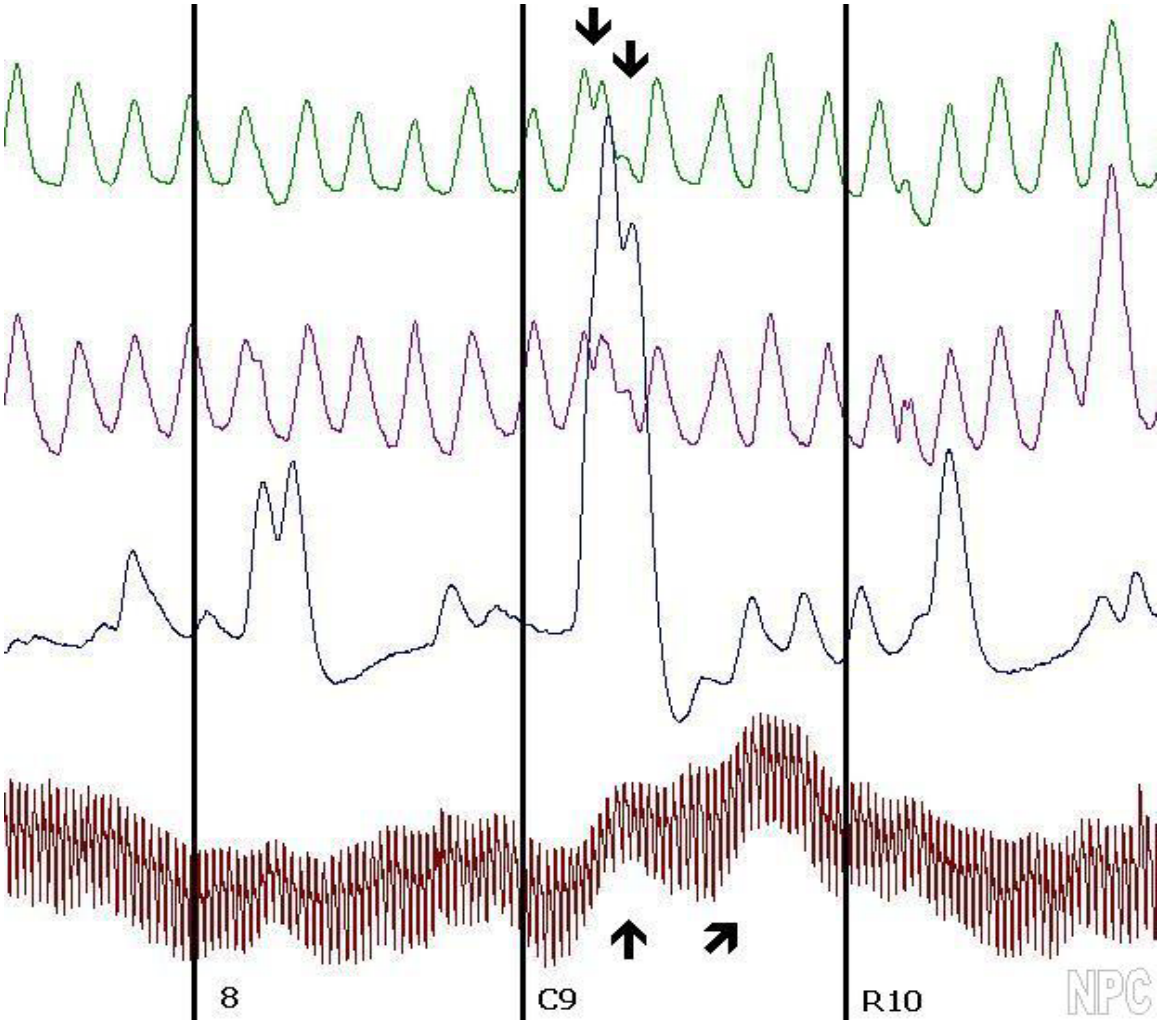
Exemplar G4. Exaggerated EDRs and cardiograph responses. This is the pattern to what one might expect with a combination of pain and movement countermeasures.



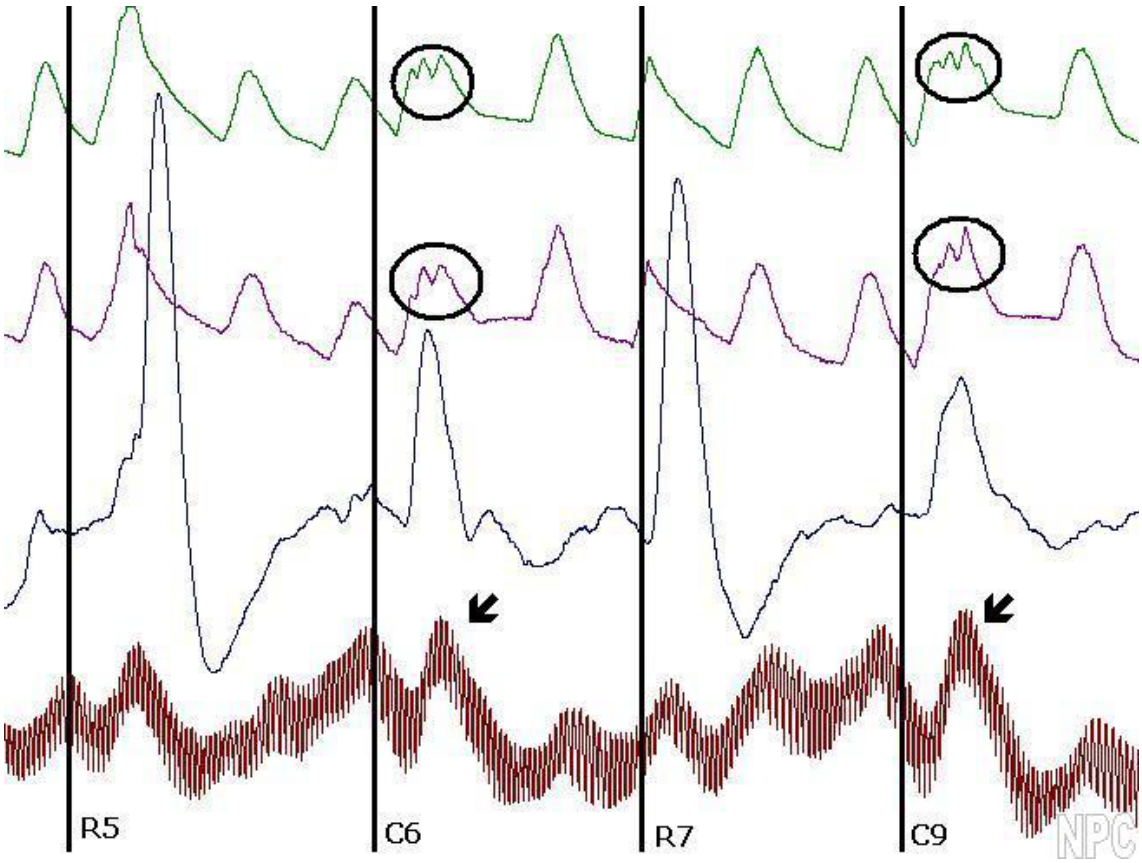
Exemplar G5. Double answer distortion time-locked to a sharp cardiograph rise, caused by a tightening of the anal sphincter. Unless the examinee exaggerates this countermeasure or augments it with pain, electrodermal response will be smaller than what the other channels would suggest they should be.



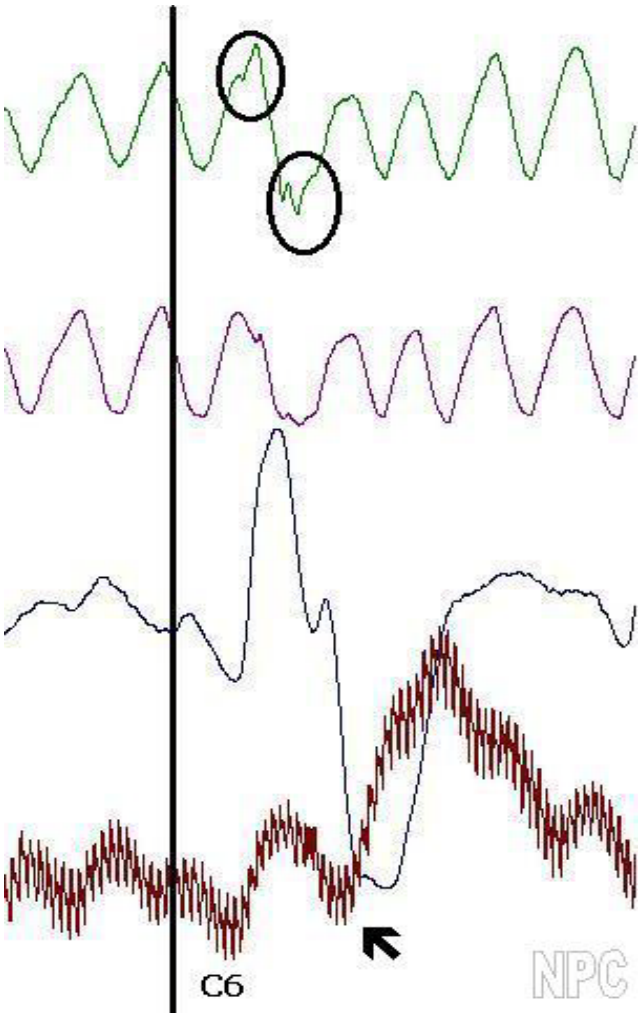
Exemplar G6. Double answer distortion and double cardiovascular response.



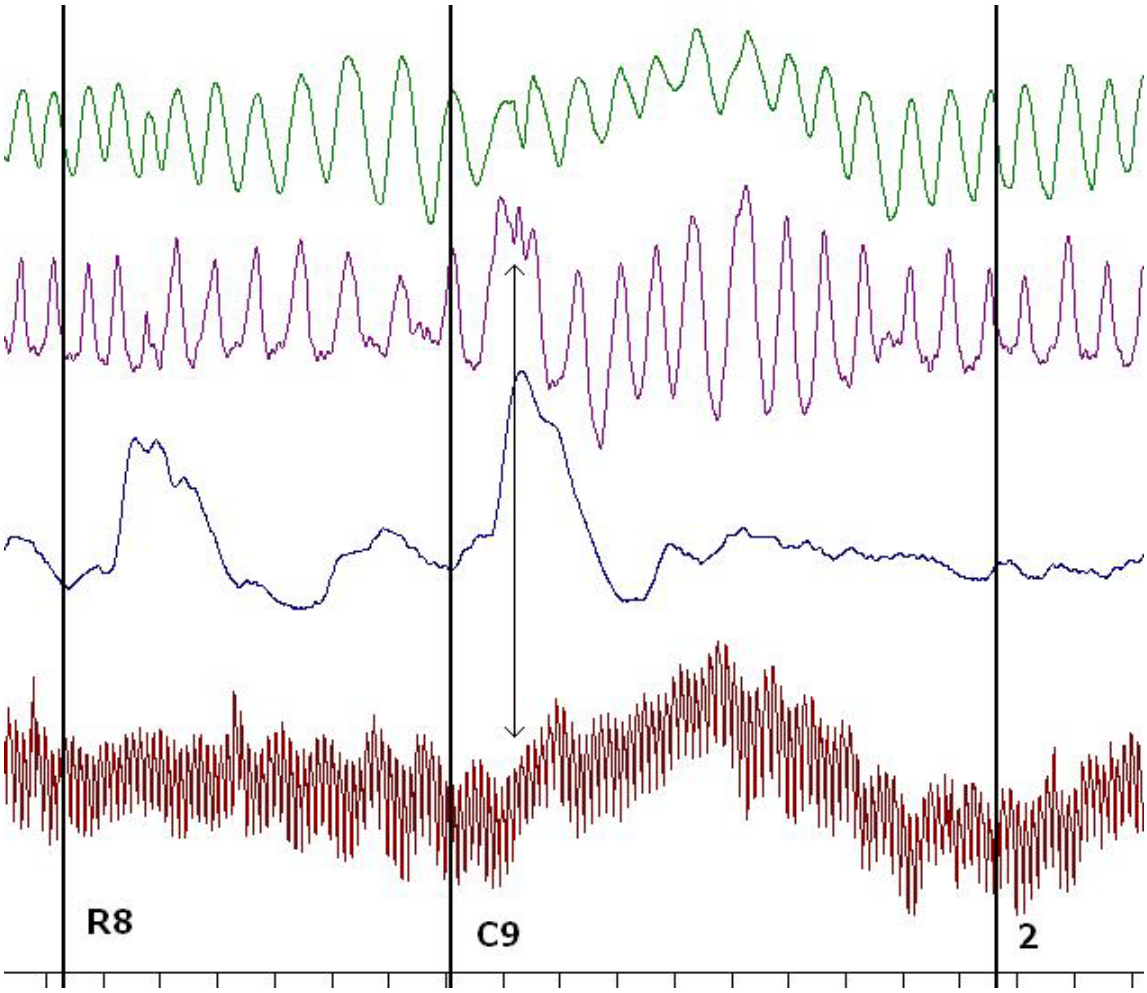
Exemplar G7. Double answer distortion associated with a sharp cardiovascular rise.



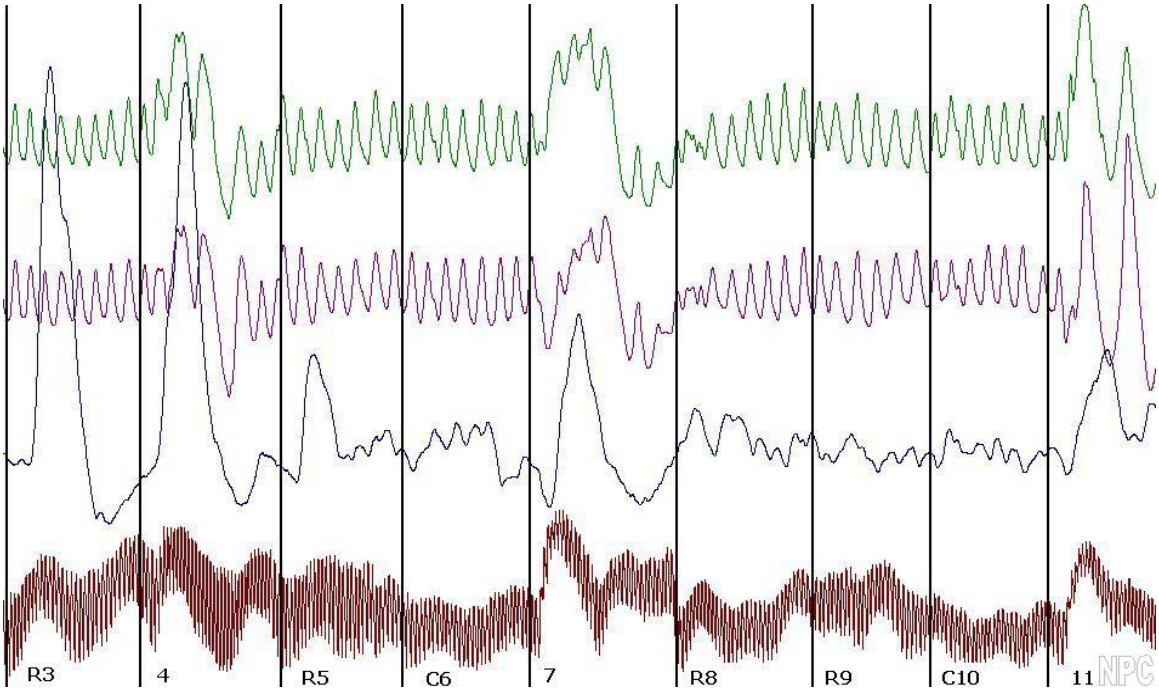
Exemplar G8. Double answer distortion associated with a sharp cardiovascular rise, and double cardiovascular response.



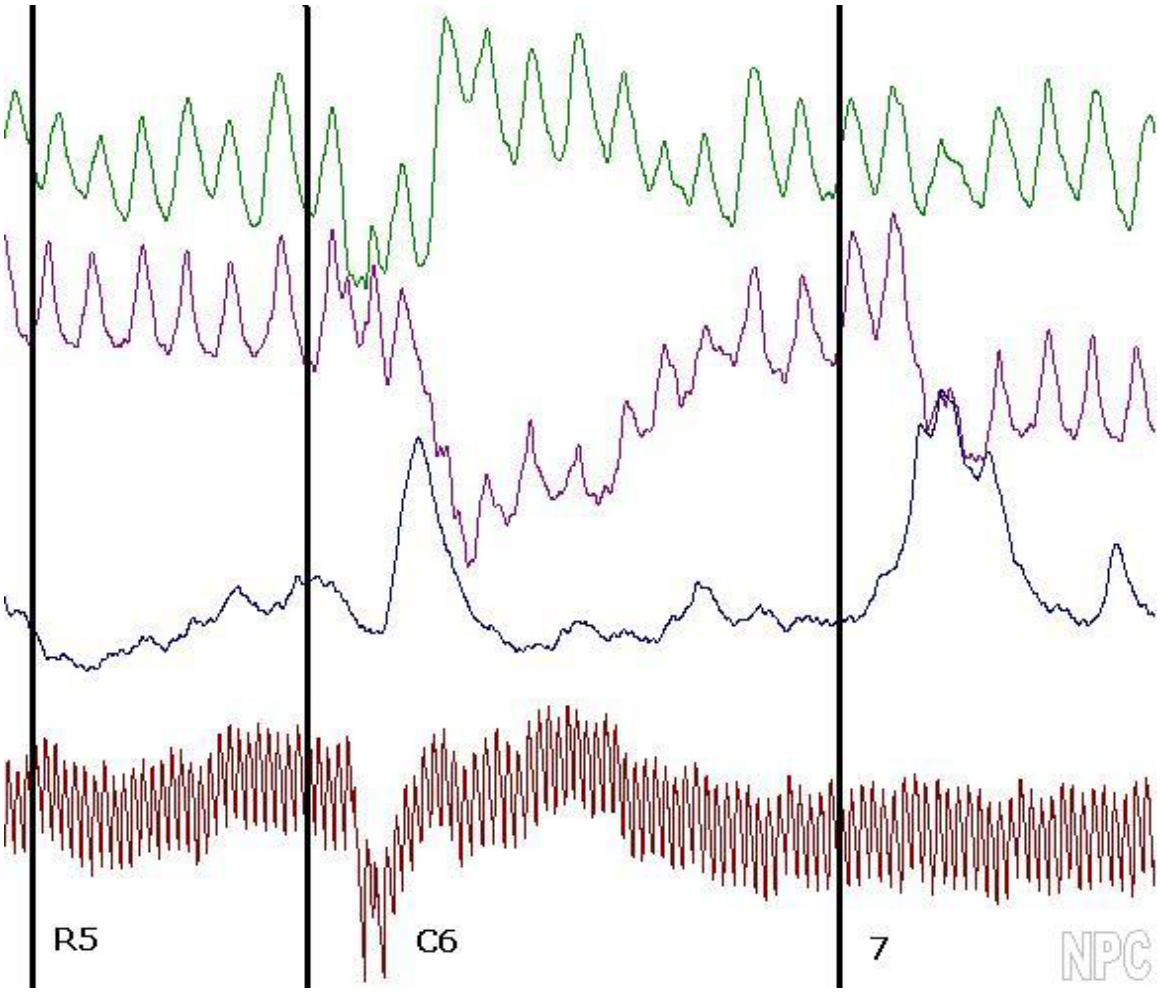
Exemplar G9. Double answer distortion associated with a sharp cardiovascular rise, and double cardiovascular response. Also contrasting pneumograph baselines.



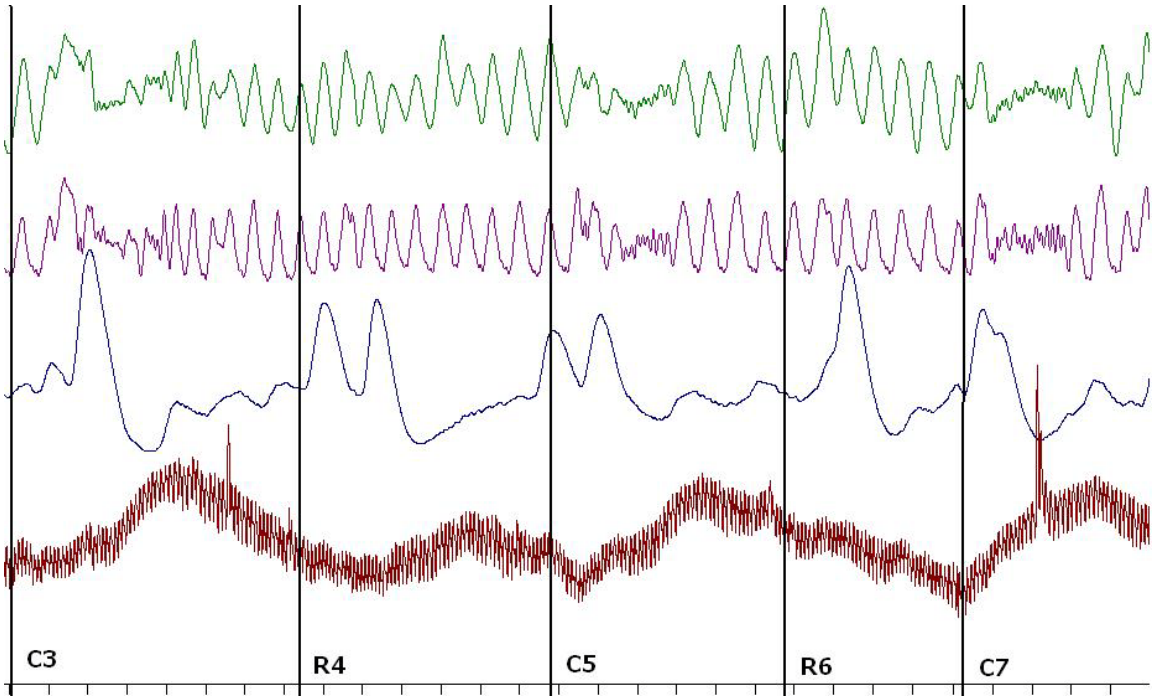
Exemplar G9. Multiple indicators: false pneumograph baseline rise, sharp cardiovascular rise, and most significantly, the reactions are taking place on irrelevant questions. The examiner had misdirected the examinee during the pretest interview to perceive the irrelevant questions as comparison questions.



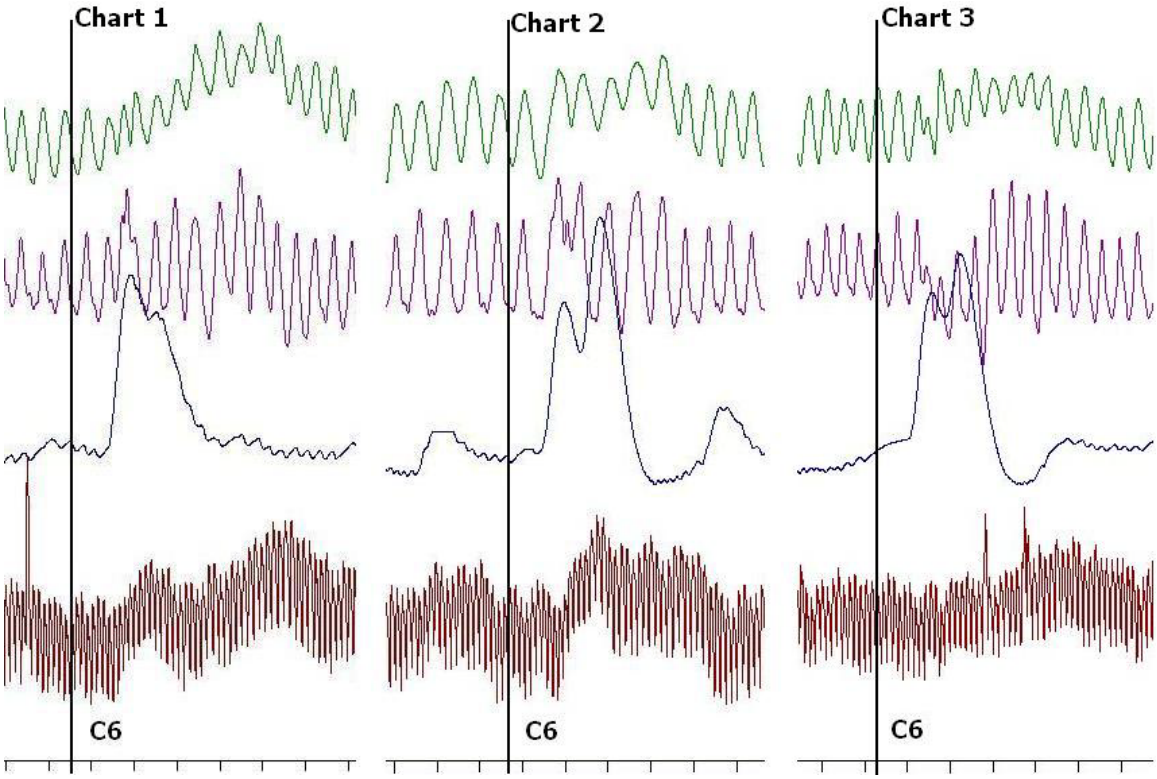
Exemplar G10. Multiple indicators. Typical pattern of an examinee tightening his anal sphincter.



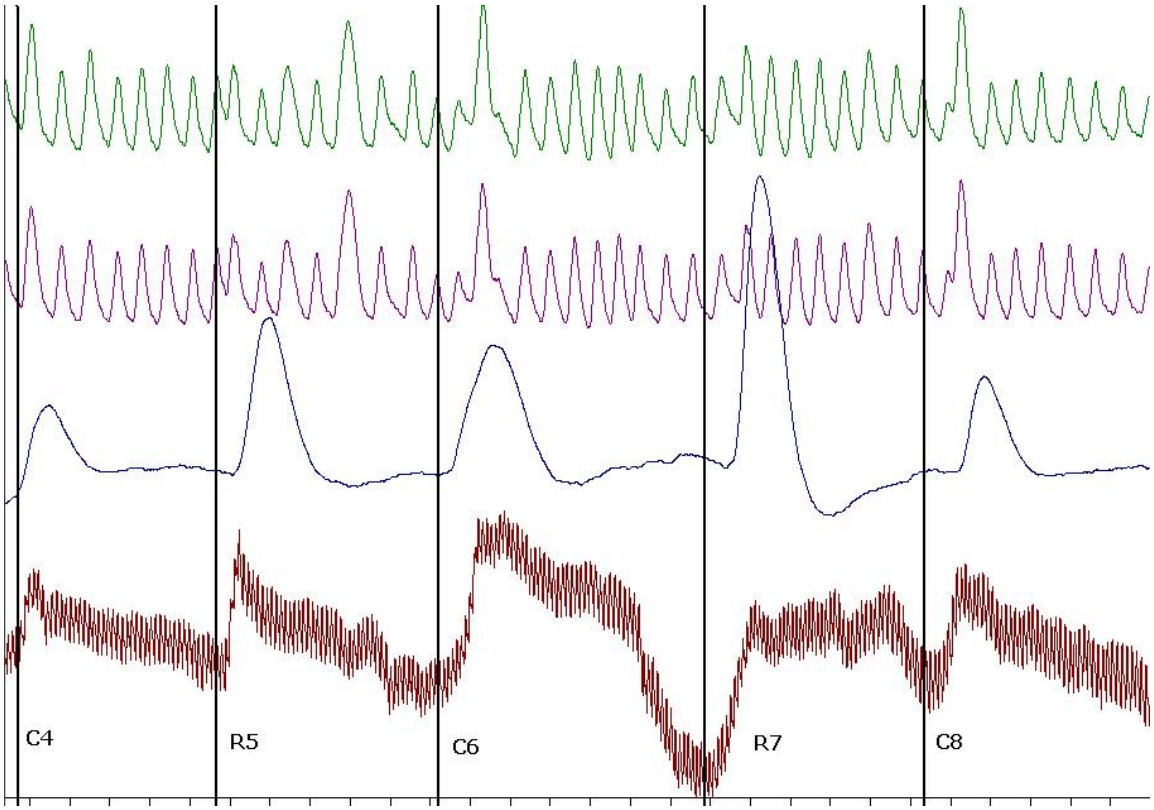
Exemplar G11. Multiple indicators. Very rapid breathing on the comparison questions and double rises in the cardiograph tracing. Also observe that the reactions on comparison questions are highly similar to one another.



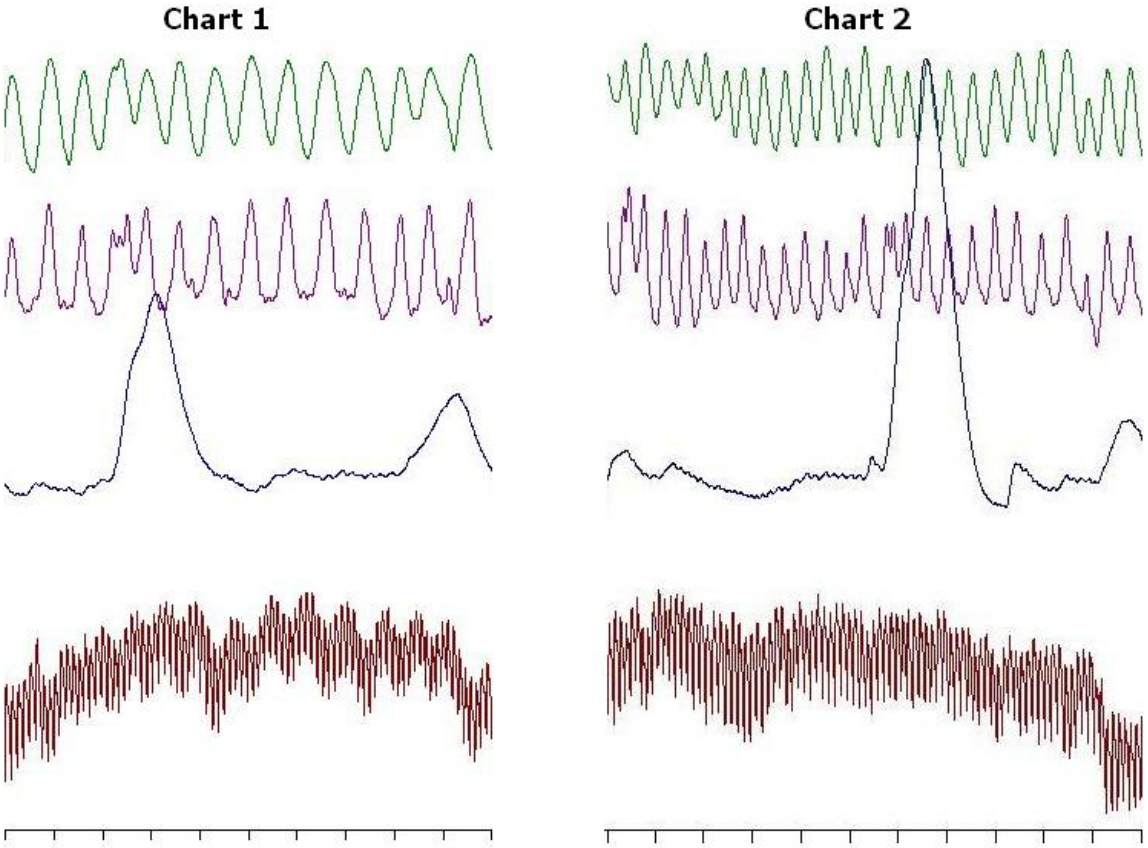
Exemplar G12. Cookie-cutter reactions on C6 over three charts.



Exemplar G13. Movement. Because this tracing lacks the double cardiograph rise typical of the anal sphincter countermeasure, the distortions are probably the result of movement of the upper body or arms.



Exemplar G14. Change in breathing rate between charts. One of them must be false.

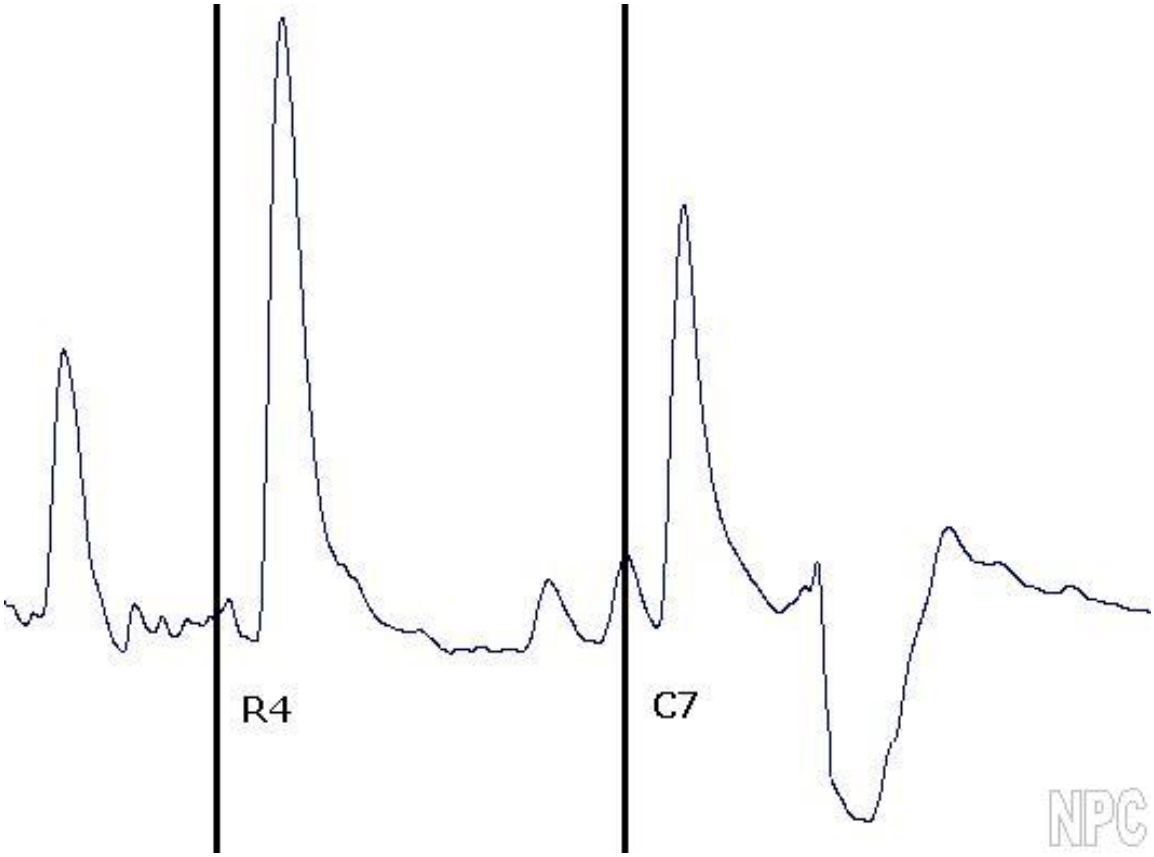


Not Countermeasures

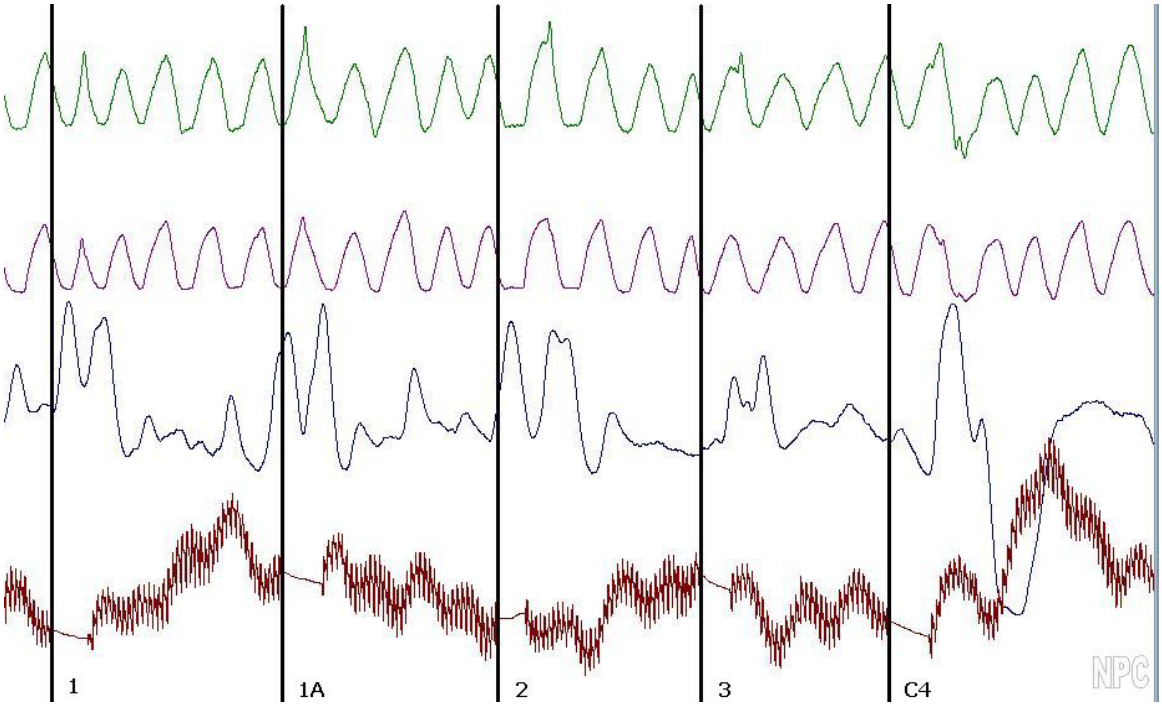
Just as important as the ability to detect countermeasures, examiners should also be able to identify anomalies that are not countermeasures. The anomalies can be the results of innocent examinee behavior, instrumentation problems, or even examiner-caused problems.

The following are examples of unusual tracing patterns that were not part of a countermeasure attempt. See if you would have correctly identified these.

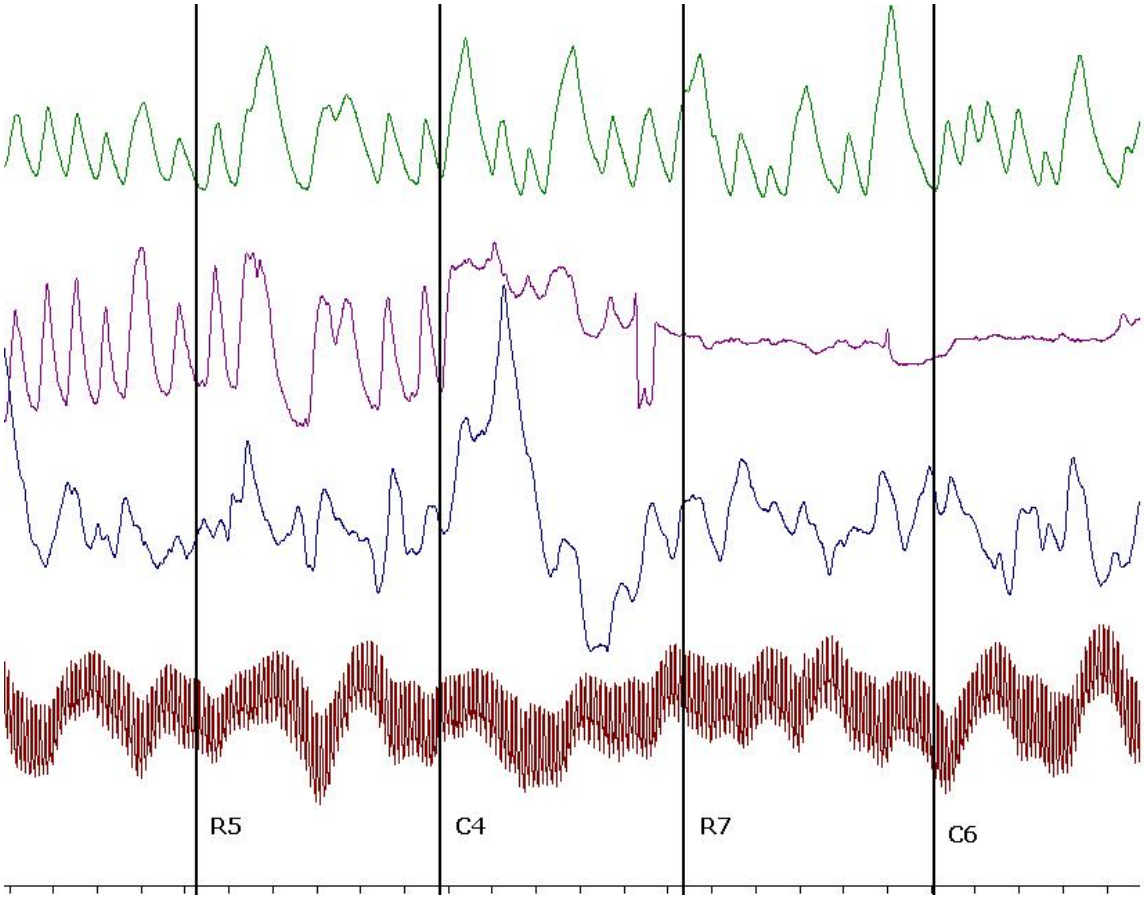
Exemplar N1. Movement. A single movement as seen below, especially one that is very delayed is probably not a countermeasure. It may be either an instrument problem, or an accidental movement.



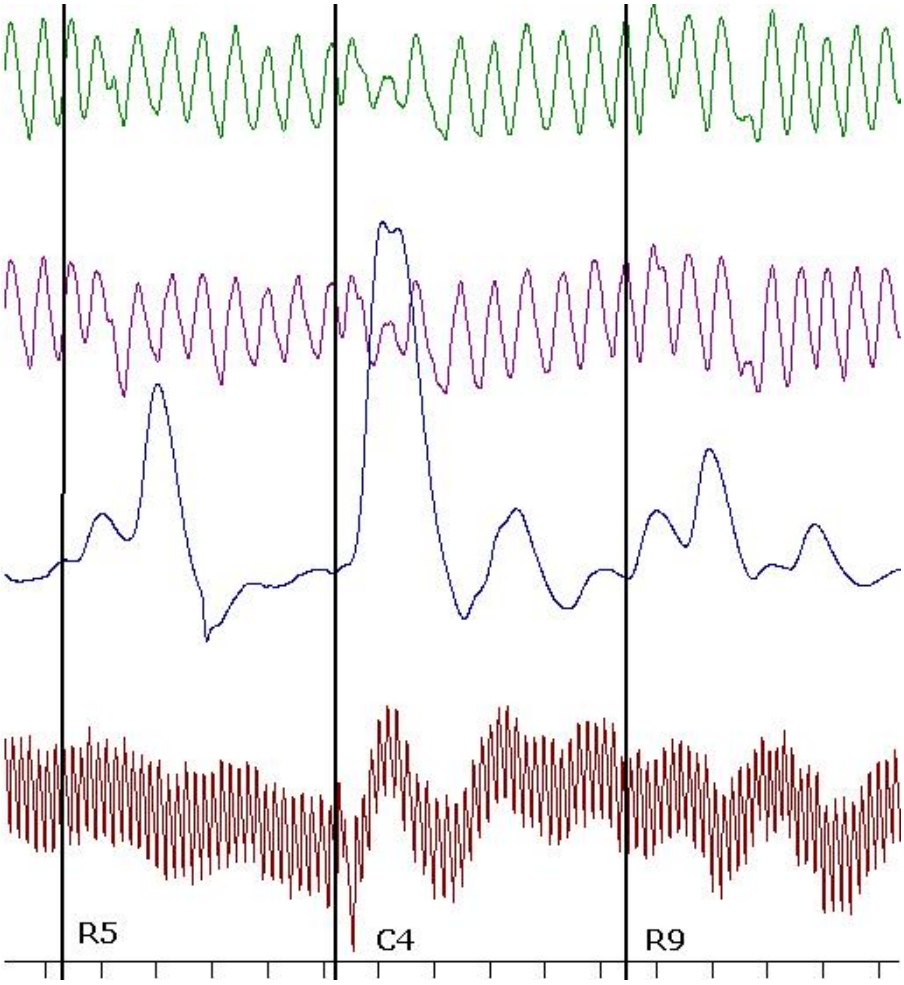
Exemplar N2. The case of the missing pulse. In this session, the examiner had accidentally placed the cardio cuff tubing under the polygraph. When he placed his hand on the instrument to mark the question, the weight of his hand combine with that of the polygraph caused the cardio cuff tubing to pinch off.



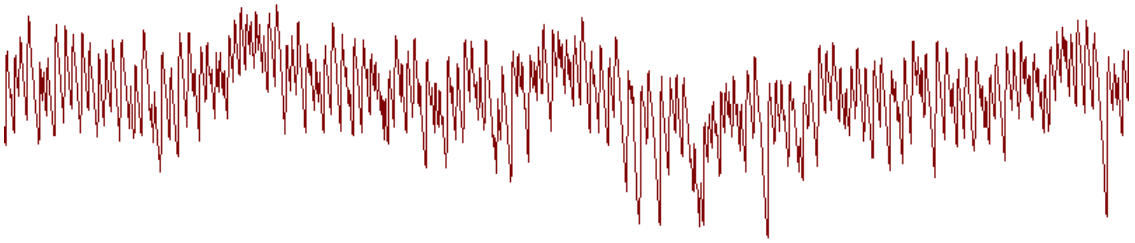
Exemplar N3. Break in the lower pneumograph assembly connector line.



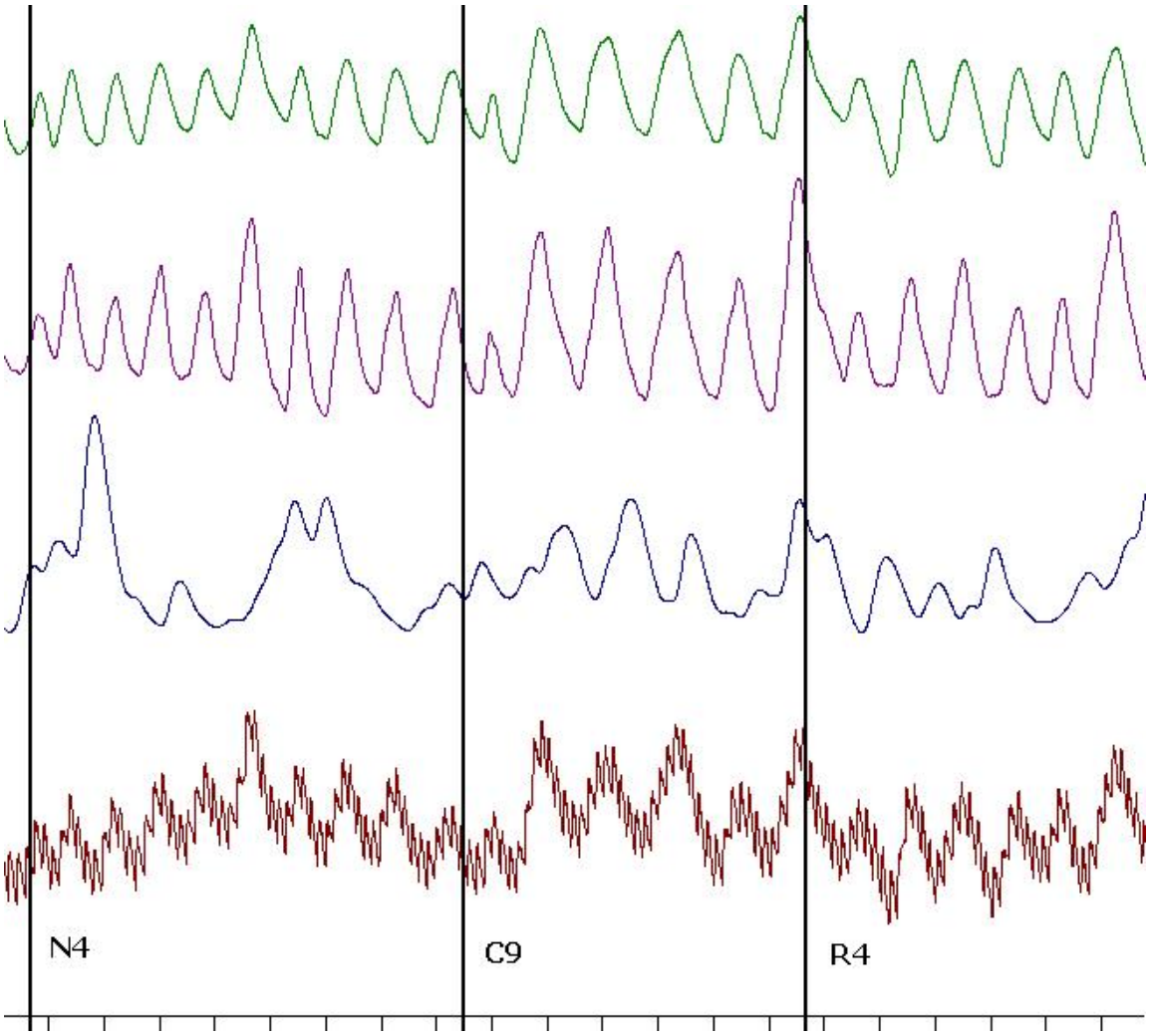
Exemplar N4. Premature ventricle contraction (PVC). Though this may at first appear to be a movement at C4 in the cardiograph tracing, at closer inspection one will see that there is a missing heartbeat. This is caused by a PVC. PVCs are common, and involuntary.



Exemplar N5. Irregular PVCs. What appear to be frequent movements are actually irregular but repetitive PVCs.



Exemplar N6. Cyclical cardiograph responses. In this case, it is because the cuff is placed where the examinee's chest movement from breathing puts direct pressure against the cuff. Note that the breathing and cardiograph rises occur simultaneously.



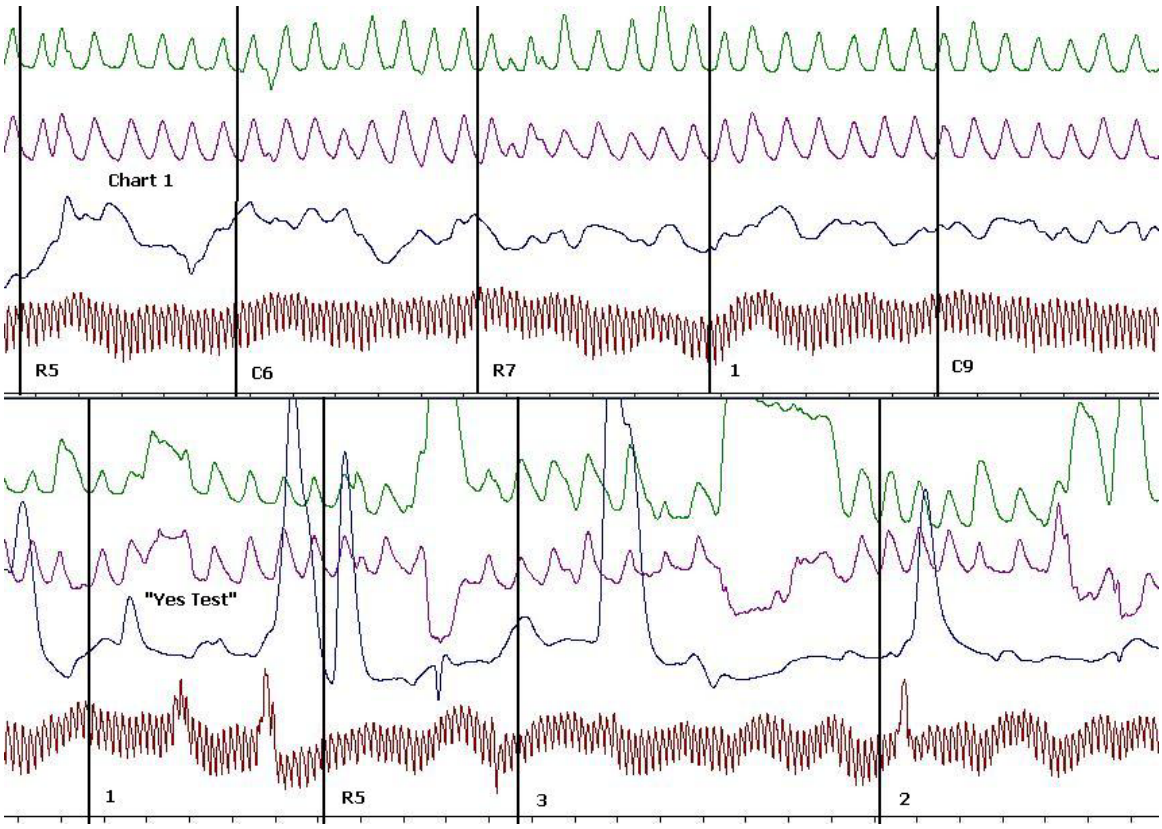
The "Yes Test"

The Yes Test was first introduced to polygraphy by John Reid in his text *Truth and Deception*. It is a procedure designed to elicit countermeasures from an examinee who is motivated to do so. The Yes Test is not routinely used, but rather is prompted by an examiner's suspicions that the examinee may be trying to defeat the test. When it succeeds, it provides a powerful indication of the examinee's motivation. To learn more about the Yes Test, go to the Examiners Desk Reference module titled *Yes Test*.

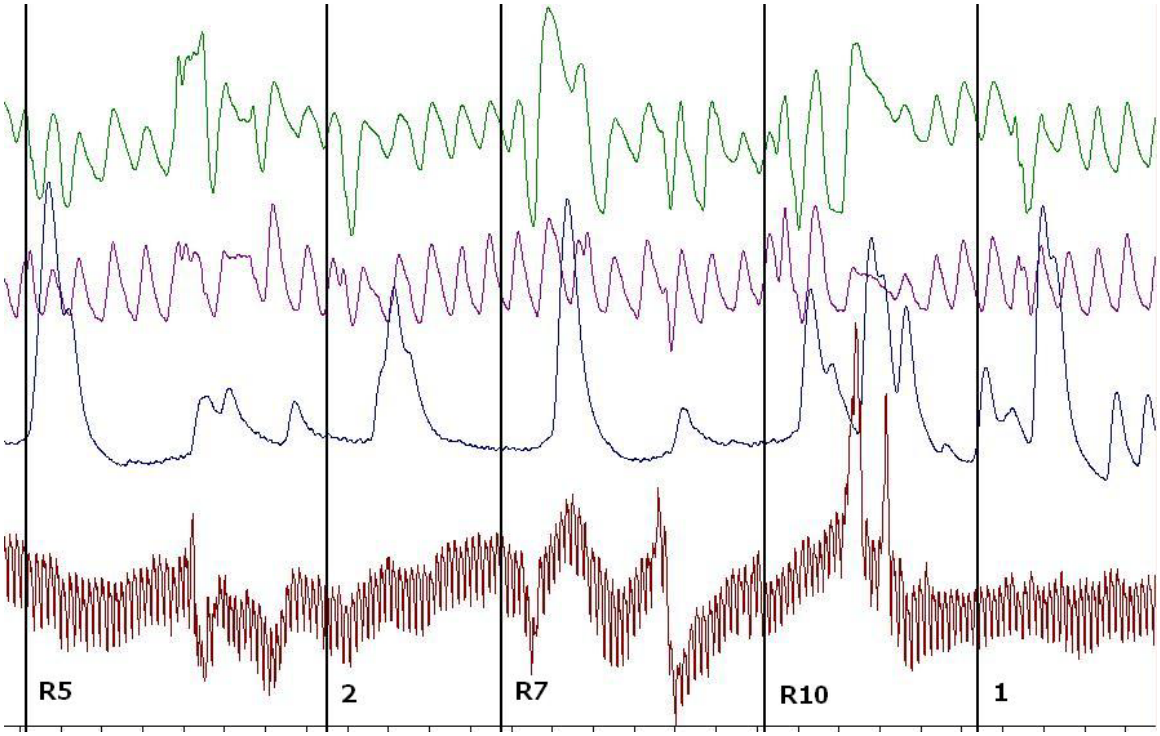
The Yes Test consists of a single chart. Interpretation of the Yes Test is different from that of other tests in that phasic responses that ordinarily would be considered diagnostic are ignored for the Yes Test. Whether an examinee responds or doesn't respond physiologically is irrelevant in this procedure. Instead, the examiner looks for countermeasure indicators, such as movements or radically altered breathing. These behaviors can be the foundation for a polygraph decision of Purposeful Non-Cooperation (PNC). A PNC decision indicates that the examinee has attempted to manipulate the outcome of the examination. It is not the same as a DI call, however. Diagnostic decisions of truthfulness or deception rely entirely on autonomic responding, not behavioral manipulations. A PNC call does not speak to truthfulness or deception, but only to cooperation.

Special Note: Examinees will not always attempt to manipulate the Yes Test, particularly if they have been exposed to it in the countermeasure literature. Examiners should not conclude that the examinee was fully cooperative based solely on a Yes Test in which there are no indications of examinee manipulations.

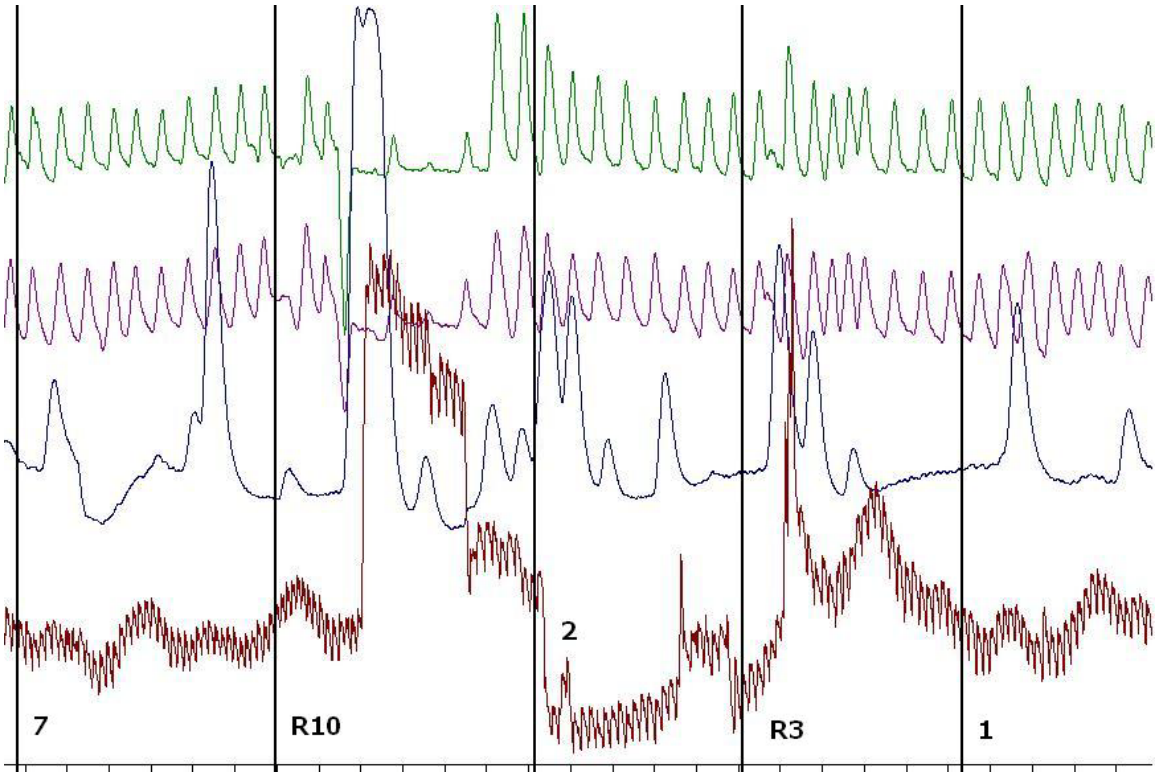
Exemplar Y1. Comparison of Regular Test and a Yes Test.



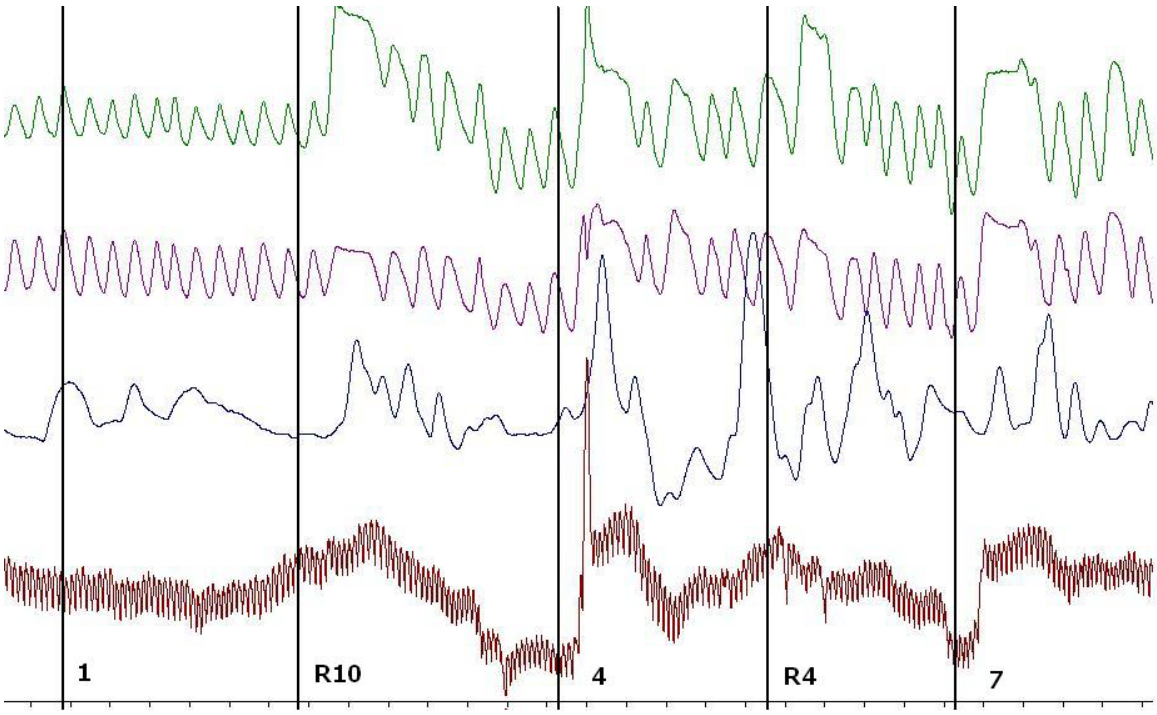
Exemplar Y2. Attempted manipulation to the Yes Test



Exemplar Y3. Attempted manipulation of the Yes Test.



Exemplar Y4. Attempted manipulation of the Yes Test.



Behavioral Countermeasures

No discussion of polygraph countermeasures would be complete without devoting some attention to Behavioral Countermeasures. These are countermeasures directly targeting the examiner. The goal is to make such a favorable impression on the examiner that it affects chart interpretation to the benefit of the examinee. Almost all literature that attempts to teach people how to beat the polygraph includes some mention of this technique. So consider that when the examiner is attempting to build rapport with the examinee, the examinee may be trying just as hard to build rapport with the examiner.

The practice is actually based on a well-established and researched psychological aspect of human reasoning known as *confirmation bias*. It can best be defined as seeking or interpreting facts that support our existing beliefs, while ignoring or discarding facts that contradict them. It is thought by some scholars to be the single most problematic aspect of human reasoning; responsible for countless decision making errors. It is a weakness we all have to some degree.

Subjectivity exists in scoring polygraph charts. All charts collected during an examination are not pristine and perfect. Very often the difference between a plus one or minus one and a zero are slight and subject to individual interpretation. From a psychological standpoint, if the examiner tends to believe the examinee is being truthful, he will tend to score those close calls in favor of the examinee and search for reasons to explain responses that might at first appear to be deceptive or even countermeasures.

In order to establish a favorable relationship with the examiner, the examinee may; be overly friendly, complimentary or courteous to the examiner; try to find some things in common with the examiner to discuss rather than the relevant issues; try to convince the examiner that he did not, could not, or would not do the relevant deed; wear provocative or inappropriate clothing; look for sympathy by appearing overly emotional.

Final Considerations

There are other, more subtle indications of countermeasures that can be seen in score sheets. One of them is the extreme high score. While it is possible for truthful examinees to have total scores with the 7-position scale of +25 and higher in three charts, this is quite uncommon. If an examiner has one of these cases, there may be value in reviewing the charts for signatures such as those shown in this module.

Another indicator of countermeasures is when the scores from the polygraph channels are in strong disagreement with one another. Small disagreements are not suspicious by themselves, but a +12 in the pneumograph and a –10 in the electrodermal is cause for concern. After all, the sensors are presumably attached to the same human body, and these bodies are not inclined to disagree within themselves regarding whether it is aroused by certain questions. It is important to sum scores by channel in order to detect these discrepancies. A score sheet is available in the Examiners Desk Reference that allows examiner to look at scores by channel, chart, and question.

One of the methods that can discourage countermeasures from those who might be tempted to try them is called the social contract. The social contract is a verbal pact struck between the examiner and examinee during the pretest interview in which the examiner commits to the examinee to giving the most professional and fairest polygraph examination, and in exchange the examinee commits to doing only what the examiner says without trying to "help himself." The agreement might be sealed with a handshake or other sign of commitment. The goal is to have the examinee take on a sense of personal obligation to be cooperative, with the understanding that to do otherwise is a breach of the agreement, and a signal that the examinee has something to hide. It is a method devised and used with great success by Lynn Marcy.

Finally, an experienced examiner may detect peculiar examinee behavior during the session. Certain examinee groups, such as those in prison, post-conviction sex offender programs, or police applicants, sometimes share information among themselves. Consequently, examinees in these groups might start giving similar answers or behaving in ways that would lead one to believe they were cooperating with each other against the examiner. Examiners who test in these environments need to remain vigilant.