

29 September 2020

# IOGP-IPIECA Health Committee statement on COVID-19 testing in the oil and gas industry

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## Note

This document has been prepared using collective insights from the IOGP-IPIECA Health Committee, with consideration of the latest information and positions of international bodies such as the WHO, CDC, national health bodies, Oil and Gas UK, and others.

The need to urgently address issues in the rapidly moving COVID-19 situation means this document has not gone through the usual approval/review cycles at IOGP and IPIECA, and will be under regular review as the situation evolves. This document is intended to provide guidance to harmonize protocols for testing and quarantine for the oil and gas industry. Many local factors, such as prevalence of the virus, the type of operation/location, accommodation, and response capability affect the total risk picture. Therefore, measures to manage the risk to ALARP (As Low As Reasonably Practicable) may differ across different locations, including the timelines for quarantine.

Users are encouraged to use the document in support of public health advice and any legal frameworks that may exist from national authorities.

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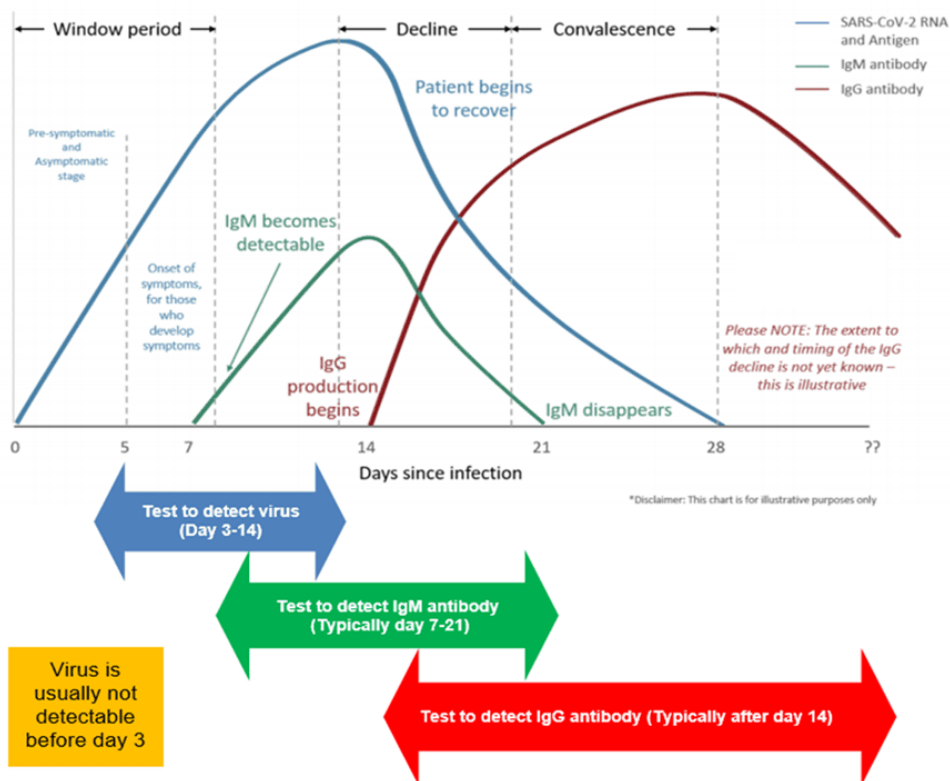
## Introduction

As the COVID-19 pandemic evolves, the increased need for testing presents significant challenges. Limited societal readiness, lack of available testing infrastructure, and the validity of tests used are some of the principal hurdles to establishing an effective and consistent testing regime. The confusion is further amplified by the rapid development and deployment of new testing methods and protocols by many labs and manufacturers, with limited verification of their validity or peer reviewed research.

This document aims to provide clarity on the current types of testing, the opportunities, and limitations they provide, and a method to assess if testing is appropriate for a specific operational site or organization. It will be reviewed monthly, or sooner if appropriate. The user is encouraged to verify that they are in possession of the latest revision before use. A revision history is included on the last page of this document.

## Types of tests

A polymerase chain reaction (PCR) test is an Antigen test, one of two broad types of tests available, each described in more detail below. The first type of tests are based on detecting part of the genetic material of the virus (PCR) or proteins associated with the virus (Antigen Tests) and the second type is aimed at detecting the body's immune response to the virus (Antibody Tests). These different detection methods impact how soon after infection the test can become positive and how accurate these results are. Figure 1 shows the different detection methods and timeframes.



### For illustrative purposes only

Graph from: "Purpose and Options for Testing for SARS-CoV2 (the COVID-19 virus): Considerations for World Bank Task Teams Managing COVID-19 Fast Track Facility Operations" 09 April 2020

Note, original illustration has been adjusted slightly by removing inference to immunity, as this is not proven.

Figure 1. Virus detection methods and timeframes

Available tests commonly used for COVID-19:

1. **Type 1:** Testing for the SARS-CoV-2 virus by detecting RNA (PCR) or virus proteins (Antigen Tests)
  - PCR tests (to detect SARS-CoV-2-RNA, laboratory based and point of care) are used to verify whether a suspected case carries the virus and has high specificity for COVID-19, meaning a positive result is almost certainly positive. PCR can also be done on asymptomatic people although this comes with some risk of missing cases of (early) infection. These are the preferred tests for diagnostic purposes in relation to key control measures in our industry. The key limitations have been societal availability of tests, turnaround times, and the sampling method. They rely on a nose/throat swab sample that, when done wrong, increases the number of false negative test results. As such, self- sampling is discouraged. False negatives are also more common in the first days after exposure to the virus when virus levels are still below the detection limit or not in the sample even when taken correctly (common in the first 48-72 hours after the virus enters the body and infection begins, see Figure 1). A false negative result should be considered if the PCR test is negative while the patient has symptoms suggestive of COVID-19. A second PCR test can be conducted along with further diagnostic test to determine if the symptoms are COVID-19 or not.
  - Antigen Tests detect the presence of viral proteins (antigens) expressed by the COVID-19 virus in a sample from the respiratory tract of a person. The antigen(s) detected are expressed only when the virus is actively replicating; therefore, these tests are most suited to identify acute or early infection. Antigen tests are highly specific, but not as sensitive as RT-PCR. Overall, in alignment with the World Health Organization (WHO), use of virus antigen tests is not recommended for diagnosis of SARS-CoV-2 infection.
2. **Type 2:** Antibody tests to detect IgM and IgG are rapidly becoming available, are easy to use by non-health professionals, and scalable. Limitations apply to the antibody tests as they may have high rates of false negative results due to the immune response, only appearing days after someone already has high levels of virus in their body. Additionally, antibody tests are also unable to differentiate between active disease and the post disease stage. Variable test quality (specificity and sensitivity) and a lack of understanding of the extent and duration of immunity (if any) to COVID-19

after having recovered from the illness, makes plans to use these tests to identify those who are immune to COVID-19 premature.

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## Testing considerations for the oil and gas industry

Operational context should be considered when assessing the value of testing for managing the risk of SARs-CoV-2 carriage when going to remote locations and installations. Furthermore, any decision on how and when to use diagnostic tools to manage the COVID-19 risk in the workplace will need to be evaluated by a qualified medical professional who considers the type of test available and its limitations, the date and technique of sample collection, the history of any symptoms, and contact with infected people. The below points summarize the high-level considerations in making these decisions.

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### PCR Tests:

1. RT-PCR (Real Time – Polymerase Chain Reaction) tests are the best diagnostic method in symptomatic people, particularly in the early phase of a SARs-CoV-2 infection, but still have limited availability in some countries and should be directed to those who need it most. As such, prioritized testing specific to our industry becomes a moral issue when not strictly indicated on medical grounds. It therefore needs to be aligned with priorities and guidance set by local health authorities. In some areas, oil and gas workers are clearly identified as critical societal workers and will be prioritized. In others, this is not the case.
2. PCR testing can be used to shorten quarantine times prior to starting work from 14 days to a week in some countries. It is most accurate (having the lowest rate of false negative results) when sampled by a health professional after 5-7 days of quarantine. This ensures that all societal exposures prior to quarantine are captured and reduces the risk of false negative tests due to sampling errors when the virus levels are still low in the first days after infection. When results come back negative from the lab,

this single test can be used to end quarantine early, although some quarantine time (7 days) will remain necessary<sup>1</sup>.

3. PCR testing is a valuable tool to test close contacts of confirmed cases in the workplace.
4. People with COVID-19 symptoms should be tested as per relevant national health guidance.
5. A key priority for the use of such tests in our industry remains to keep offshore or remote installations COVID-19 free. Therefore, the operators of such installations need to ensure and facilitate a coordinated testing/quarantine approach for all personnel wishing to travel to such installations.
6. If an inconclusive test result is obtained, it should be considered positive. Personnel which are asymptomatic for 10 days following a positive test can be considered non-infectious. Timing of the test may vary depending on exact travel history and there may be cases or situations which necessitates several tests during the quarantine period.

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## Antigen tests

1. Antigen tests are highly specific, but not as sensitive as RT-PCR tests. This means there is a higher chance of false negatives. The data reviewed on antigen tests for other respiratory diseases, such as influenza, does not give a high level of confidence in their sensitivity. Currently, the US FDA has approved one antigen-based test for SARS-CoV-2, however test specificity and sensitivity are not published and have only been determined on a small number of clinical samples.
2. Antigen test performance also depends on factors such as the time from onset of illness, the concentration of virus in the specimen, the quality of the specimen collected from a person and how it is processed, and the precise formulation of the reagents in the test kits.
3. Overall, in alignment with World Health Organization practice, use of virus antigen tests is not recommended for diagnosis of SARS-CoV-2 infection.

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<sup>1</sup> Per guidance issued by OGUK: The positive predictive value (PPV) of a positive PCR test for an offshore worker isolating at home with symptoms is 93%: in other words, the test confirms they are very likely to have COVID-19, and they should continue isolation for 7 days. For the same worker, a negative test has a negative predictive value (NPV) of 76% (in other words, 24% of negative tests are false negative results), which is not considered sufficient to confidently return the worker offshore. The worker should continue to isolate for 7 days.

4. As this testing method is further developed it will likely play an increasing role in large scale preventive testing both in the industry and society at large. However, once reliable and accurate antigen tests become available, the supply chain issues that have affected access to all other types of coronavirus tests are nearly certain to reoccur.

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## Antibody tests

1. Antibody (IgM and IgG) tests are rapidly evolving and readily available. Accuracy of the different products on the market remains debatable and the current World Health Organization advice is that they are only useful in large population prevalence surveys. The tests do not have the required accuracy for screening workers or controlling outbreaks, due to the high rate of false negatives and variable quality of the different brands of tests. While the quality of testing kits is improving, the fundamental aspect of antibody testing is an assessment of the body's immune response to the virus. Tests will therefore always have higher levels of false negative results in the days following infection, as the body's immune response will still be low.
2. The use of antibody tests is not recommended for identifying potential immunity to SARS-CoV-2. The evidence on acquired immunity post SARS-CoV-2 infection is still inconclusive. A level of immunity following infection is likely to protect people to some extent, but how much and for how long is yet to be accurately determined. Recent reports on a number of cases of reinfection with the SARS-CoV-2 virus in individuals who had had COVID-19 months before and had cleared the virus provide further evidence that the extent and duration of immunity after a COVID infection remains unclear.
3. Antibody tests can be used for mapping of controlled larger populations that can include several companies/facilities in the same work area but should not be used for diagnostic purposes. The results may give insights into previous disease prevalence within a single company, location or population and may also provide valuable information for national and international health bodies.

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## The role of testing and quarantine in practice

Testing for SARS-CoV-2 virus infections is an important element of managing the risk of an outbreak at a worksite. Nevertheless, the tests themselves are not a barrier to infection and a testing regime should only be introduced when all other infection control and preventive measures stopping the transmission of

the virus between people have been implemented and optimized. There is a risk of “COVID fatigue” and people disengaging with infection prevention and control procedures, meaning regular updates and continued engagement are vital. Once this has been achieved, testing can be introduced, in combination with quarantine, with the aim of preventing the virus from entering the workplace.

Quarantine is a critical tool to manage the risk of COVID-19 spread at a worksite. It separates a person or group of people reasonably believed to have been exposed to a communicable disease (COVID-19) but not yet symptomatic, from others who have not been exposed. The aim is prevention of the possible spread of the communicable disease. Even with testing, appropriate quarantine measures will remain necessary.

Pre-deployment screening of all personnel prior to departure to an offshore or remote site is accepted as good practice. This may involve up to 14 days of quarantine and a SARS-CoV-2 testing regimen. Within the 14-day period, those who are infected will likely show clinical symptoms necessitating further testing and isolation<sup>2</sup>. For those who remain asymptomatic, some will still have carried the virus; however, if they remain asymptomatic for the entire quarantine period, they are unlikely to be able to infect others after the quarantine ends. Personnel in extremely clinically vulnerable and moderately clinical vulnerable groups should have an individual occupational health risk assessment before returning to the workplace.

At the start of the quarantine period a questionnaire can be conducted to assess the baseline risk of infection. The questions should determine:

- 1) the individual's travel history to high COVID-19 prevalence areas over the past two weeks
- 2) whether they have had contact with confirmed COVID-19 cases
- 3) whether they have any symptoms associated with COVID-19

Answering ‘yes’ to any of these three questions can be the basis for postponing access to the worksite or initiate for-cause SARS-CoV-2 testing. When all questions are answered with ‘no’, PCR testing near the start of the quarantine period (day 5-8) may be used to reduce the required quarantine time to the point

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<sup>2</sup> For further information on testing during isolation periods, see Figure 2 in Lauer SA et al, “The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application”, *Annals of Internal Medicine* 172 (9), May 2020.

where a negative test result comes back. Testing towards the end of the quarantine period may be used for increased assurance of personnel being COVID-19 free.

For those who have tested positive for the virus or those who developed symptoms while in quarantine, the duration of quarantine (in isolation) may need to be extended. For people that remain asymptomatic after testing positive, isolation for up to 10 days following the test is recommended. After this period, the person is unlikely to pose any risk of infection to others and according to United States Centers for Disease Control and Prevention (CDC) guidance, there is no need for retesting after this period. For those developing symptoms, they should isolate until 48 hours after they have become completely symptom free, or as per medical advice.

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## IOGP-IPIECA position

1. We view RT-PCR testing provides a considerable level of certainty and is the preferred testing tool currently available for diagnostic purposes. This testing method should be considered for use in those situations where there is a legal requirement to do so, where critical functions for safety or business continuity that cannot be done remotely are performed, and where the consequences of having COVID-19 cases on site for people and operations are higher (e.g., offshore, remote and site accommodation). A key consideration remains the availability of PCR testing for low risk groups, without taking testing resources away from societies at large. It needs to be aligned with priorities set by national health authorities.
2. Using a screening questionnaire at the start of a 7-day quarantine, in combination with a RT-PCR test (one time) done on days 5-7 of quarantine, provides a good certainty of determining the COVID-free status of a worker prior to entering a worksite that is COVID free.
3. We do not support general diagnostic antibody testing for (remote) locations/installations unless for mapping of controlled larger populations as referred to above.
4. We would like to see a “harmonized” approach to testing for COVID-19 across the oil and gas industry, but recognize constraints set at the national health authority levels. We will therefore continue to monitor the development of testing methods/protocols and offer updates to this guidance as and when needed.



## Key testing considerations and quarantine protocols

Table 1. Summary of key testing considerations and quarantine protocols

	Intervention	Pros (+)	Cons (-)
A	<p>Screening questionnaire</p> <p>Use of a self-administered questionnaire to identify vulnerable people, those that are ill, and those that may have been exposed to confirmed or suspected cases</p>	<p>Easy to administer and low cost</p> <p>Quick turnaround time aids decision making.</p>	<p>Personnel may not provide truthful responses to questions</p> <p>Personnel may be unaware of having been in contact with a confirmed or suspected case</p>
B	Real-Time Polymerase Chain Reaction Test (RT-PCR test)	Most reliable and accurate test. Highly specific (>99.9%) if lab-based equipment (multi-channel) and test kits using 3 genome fragments are used	<p>Requires a laboratory test</p> <p>Commercial turnaround time of two days, excluding sample shipping in many locations</p> <p>Will miss early infections (up to two days)</p> <p>Testing costs</p> <p>Public health agencies and hospitals rely on these tests for managing the outbreak</p>
C	Rapid Screening Test (immunoassay) for COVID 19 antigen or antibody	Relatively cheap and rapid test that can be done onsite	<p>High likelihood of missing a true positive - since these tests produce false negative results, infectious personnel may develop the condition offshore</p> <p>High rate of false positives (who will then require a diagnostic test for confirmation)</p> <p>False positive workers will be subjected to unnecessary additional</p>

			tests and may undergo quarantine at a government facility
D	Quarantine 10-14 days	As the onset of symptoms is <14 days, this will capture all people with symptoms	<p>Requires quarantine accommodation which should be managed to eliminate the individual transparency factor</p> <p>Significantly extends the period of relative isolation for the individual (10-14 days quarantine plus days offshore). Some countries are adopting shorter quarantine periods. It has been shown that 97.5% has an incubation period of 11-12 days maximum</p> <p>Costs of keeping the crew in self-quarantine for 10-14 days</p>
E	Quarantine for 7 days + rapid screening test (immunoassay)	<p>Relatively cheap and rapid test that can be done onsite</p> <p>Quarantine will increase likelihood of identifying people with symptoms</p>	<p>High rate of false positives as well as false negatives</p> <p>Likelihood of missing a true positive</p> <p>Costs of keeping the crew in quarantine for 7 days</p> <p>Longer social isolation for employees – quarantine plus offshore time</p> <p>Compensation of false positive workers</p>
F	Screening questionnaire + quarantine for 7 days + RT-PCR test (one time) done on day 5-7	Increased odds of capturing a symptomatic person or a COVID-19 positive person	<p>Resource intensive</p> <p>Still a small likelihood of missing a case</p> <p>Costs of keeping the crew in quarantine for 7 days</p>

	<p>Note: in specific situations (where prevalence is assessed to be high and adherence to risk-mitigating measures such as social distancing is low) a RT-PCR test at day 0 of quarantine can be considered</p>		<p>Longer social isolation for employees – quarantine plus offshore time</p>
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**Revision History**

Initial issue: 4th May 2020

1<sup>st</sup> Revision: 11th May 2020: Added IPIECA logo.

2<sup>nd</sup> Revision: 6th July 2020: Updated to include Figure 1 and provide additional information on quarantine policies and antibody and antigen rapid test usage.

3<sup>rd</sup> Revision: 29 September 2020: Added information on questionnaires, updates on immunity, and summary table.