

Engine leasing has evolved from a specialised activity offered by a few providers to a service by an increased number of lessors. Increased requirements for fleet flexibility and improved liquidity have combined to fuel the demand for engine leasing.

# Top engine lessor & portfolio survey

Over the past two years, the number of installed engines on narrow and widebody aircraft has increased by 1,675. Meanwhile, new aircraft deliveries have been notoriously delayed, so airlines have had to retain their current fleets. Some have even returned parked aircraft to active service, and delayed the retirement of older aircraft. These factors have all led to an rise in engine leasing.

Airlines that are delaying retirements prior to a fleet update will look to transactions such as sale-and-leasebacks to limit their financial risk, especially if they do not know when they will change their fleets, and engine values are already declining. An airline may also want to hold on to, or buy, additional aircraft, without making a long-term financial commitment for the associated parts inventory and spare engines. Many airlines cannot do this, and so use engine leasing to bridge the gap.

While many operators still retain their own spare engines, the share of spare engines owned by lessors has increased from 20% in 2009 to 40%. Many operators own legacy engines, while lessors own larger numbers of new technology engines. As the number of legacy engines has declined, the number owned by lessors has increased, so the percentage of spare engines owned by lessors has risen. This is set to increase even further, with lessors owning as many as 50% of all spare engines in the future, according to Bobby Janagan, vice president, engine leasing at Rolls-Royce & Partners Finance (RRPF). An increase in new technology engines and retirement of older types, along with the selling off older engines by operators, all combine to increase lessors' share.

The lessors that offer engine leasing

services include original equipment manufacturers (OEM), as well as financial institutions. In addition, maintenance, repair & overhaul (MRO) companies and spare parts providers are now involved in this market to offer their customers a streamlined service.

The nature of spare engine needs means that lease terms vary widely. Shorter lease terms can range from 24 hours to 12 months, with 8-12 month terms being the most common, while longer ones range from 12 months to as much as 10+ years. These are generally known as operating leases.

## Market development

A rapid retirement of older generation aircraft was seen 10 years ago following 9/11, which inevitably led to the retirement of engines at the same time (see *Top engine lessor & portfolio survey, Aircraft Commerce, August / September 2002, page 6*). This resulted in the exit from the lease market of many small independent companies, which had traditionally dealt with older technology types that were, like now, becoming less popular. The other consequence was the reduction in value of some older next-generation engines, which moved into the secondary market sooner than expected.

Despite the cost of newer technology and the rise of the OEM as a lessor, some independents have survived and become specialists in older or smaller engines. A new entrant to the engine lessor market is AJ Walter, which already has a large share of the global spare parts and inventory market, with engines being a natural progression of this. Steve Williams, director of engine services at AJ Walter, agrees that some engine products, such as the V2500, are currently staying

stable, and holding their values. He adds that the market is also very engine-specific. For example, there is an oversupply of older CFM56-3s, which power 737 Classics, so their value has taken a hit. On the other hand, the values of newer CFM56s remain stable. Williams quantifies this by saying that a mid-life CFM56-3C1 could be worth \$2 million, while a similar new technology engine like the -7B24 is closer to \$4.25 million. With this in mind, AJ Walter has started with some older technology, but aims to have a pool of about 30 engines covering both new and old CFM models and V2500 engines, and possibly CF6 and PW4000 engines.

Values are now more static with the industry awaiting the service entry of new aircraft and their associated engines. Once this happens, it is possible that certain engines will again see rapid drops in value. "The traditional values of old and new hold true, but the market adds an additional layer of complexity," says Fred Dupont, president and general manager, Pratt & Whitney Engine Leasing, LLC (PWEL). "Values change, but we do not dictate this. The market does and we have to react by responding and being pro-active with market trends. So, if the market is growing, so will we."

Engine values are a function of supply and demand. "We see engines powering popular models like A320s and 737s having a long, useful life for the foreseeable future," says Julie Dickerson, senior vice president, GECAS Engine Leasing. "It will be many, many years before there are enough A320neos, for example, in operation to have any sort of impact on the CFM56-5Bs. We have several older types such as the CF6-80C2 that are still in high demand, because airlines continue operating their 767s and

## TOP ENGINE LESSOR PORTFOLIO

Lessor	Parent company	Portfolio size	Portfolio value \$million	Engine types
<b>Original Equipment Manufacturer connected lessors</b>				
GECAS Engine Leasing	GE Capital	400+	--	Diverse
International Aero Engines (IAE)		Less than 10		V2500
Pratt & Whitney Engine Leasing (PWEL)	United Technologies Corp.	120-150	More than \$1bn	All PW engines inc. V2500s and CFM56s
Shannon Engine Support Ltd (SES)	CFM International; a 50/50 JV between Snecma (Safran Group) & GE	250	--	CFM56-3/-5/-7B
Rolls-Royce & Partners Finance Ltd.	50/50 joint venture: Rolls-Royce and GATX	350	\$2.6bn	Rolls Royce and IAE engines
<b>Independent lessors</b>				
AerSale	Primary equity partner is Leonard Green & Partners	50+	\$200+	CFM56 PW4000 CF6-80C2
AJ Walter Engine Lease Finance Corp. (ELF)	AJ Walter Bank of Tokyo - UFJ Ltd	at least 4 230	\$10 \$1.5bn	CFM56-3 CFM56-3C1/-5C4/-5B/-7B GE90 V2500 CF6-80C2 CF34-8/-10 PW4000 Trent 700 RB211-535
GA Telesis	Largest shareholder is Global Principal Finance Corp. a subsidiary of Bank of America Merrill Lynch	60+	Confidential	CFM56 CF6-80C2 PW4000 CF34 JT8D-219 V2500
Kalitta Turbine Leasing	Joint venture: Kalitta Air & Turbine Leasing Corp.	48+	\$60	CF6-50/-80 CFM56 JT9-7A/-7Q/-7R4G
MTU Maintenance group	MTU Aero Engines	40-45	\$150	CFM56-3/-5B/-7 CF6-50/-80C2 GE90-110B/-115B PW2000 CF34-3/-8C/-8E/-10E V2500
Royal Aero Leasing GmbH	Royal Aero Group GmbH	11	\$45	PW121 CFM56-3 CFM56-5 PW4000-94 Trent 500
TES Aviation Ltd	DVB Bank SE	10-15	\$40	RB211-535E4 PW4000 CF6-80C2 CFM56-3
Willis Lease Finance Corporation (WLFC)	N/A	200	\$1bn	Virtually all, but concentrate on CFM56 CF6 PW4000 CF34 PW100 V2500

747s as a bridge to the 787s, newer 747s and A330 models that they have on order. This situation is helping extend the revenue-generating potential of so-called older engine types.”

When values do drop, they could affect those lessors that are not connected with an OEM, or are not backed by large financial institutions that are able to absorb and cover the drop in assets, or an essential investment in stock.

Over the past 20 years, the influence of the OEMs in both engine MRO and engine leasing has increased, with many having multiple engine shops in most parts of the world. Some are 100% OEM-owned and operated, others are joint ventures (JV) with airlines or MRO facilities. As a result, many operators of newer engine technology find it preferable to be under maintenance contract to the

OEMs, rather than organise maintenance themselves in-house or through the local engine shop. This is especially true for full overhaul shop visits.

An OEM can offer a number of integrated services with new engine sales agreements, which often include spare engine provision. This is attractive for the increasing number of operators that do not want to tie up their capital in large inventories. “Our size means that airline customers look to us for larger, more complex transactions, such as purchase-and-leaseback transactions or loans,” says Dickerson. This makes it harder for alternative lessors to compete, and OEMs have become the largest engine lessors as a result. By the very nature of the product and the reason an airline might use an OEM, OEMs generally deal with newer technology. Dupont says that if the

CFM56-3 is still counted as new, then less than 10% of PWEL's portfolio is old technology. Realistically, CFM56-3s are not so new anymore, so the percentage is likely to be similar to competitors'. RRRPF states that new technology engines account for at least 80% of its portfolio.

MRO facilities now increasingly offer spare engine provisioning, either as part of a service package, or on a lease separate to maintenance, although the former is more common. They generally follow the OEMs in the variety and age of the engines, with just a slight rise in the proportion of old technology.

Banks and capital finance companies are also interested in engine leasing, with some using it as a business alongside aircraft leasing, although some specialise only in engines. Both types often look to use their vast reserves of capital to

purchase newer engine technology.

The attractiveness of the engine lessor market used to be small, but it is now growing, with many other companies, such as aviation consultancies and spare part inventory suppliers, looking to join it. This has resulted in over 10 current engine lessors and at least 10 more companies acting as asset managers. More than five lessors are likely to enter the engine lease market over the next two years.

## Lease types

Engine lessors offer a multitude of leases, depending on both the operator's requirements and financial situation. Generally, a lessor will offer short, medium, long and specialist terms, depending on the customer's needs, although most will have a preferred set of terms.

OEMs, for example, are able, due to their size and limited risk factors, to offer

flexible agreements. Dupont emphasises this: "What do we not offer? We can offer pretty much all terms to accommodate customers."

On the other hand, MRO facilities generally, although not exclusively, find short-term leases more useful to airlines that require coverage while they have an engine in the shop. Lufthansa Technik and Delta TechOps are some of the maintenance providers that can also assist customers with short-term engine leases, while MTU Maintenance offers short-, medium- or long-term operating leases, and engine stand-by arrangements, sale & leasebacks and membership access to a pool of spare engines.

Another short-term specialist is TES Aviation Ltd. "Engines are not leased specifically as spare engines," says Julian Rees, lease manager at TES Aviation Group. "They are typically used to cover shop visits on a daily basis, while some leases have run for as long as two years."

As Rees comments, leases can originally start on a short-term basis, but often they will run on. Williams says that while AJ Walter's first few engines were leased on short-term agreements of about three months, these have migrated into longer, 12-month leases. "While the perfect solution might be a long-term lease," he says, "you might have to do 10 short-term leases instead to keep the stock moving and revenue coming in, because of the time waiting in between long-term leases."

## OEM engine lessors

There are five main OEM engine lessors: GECAS Engine Leasing (GEEL); PWEL; RRRPF; Shannon Engine Support (SES) for CFM International; and International Aero Engines (IAE) (see table, page 8).

In addition there are other OEMs such as Falko (formerly BAE Systems Asset Management) that will deal with engine leasing if required by a customer.

The OEMs are now the largest lessors, with portfolios numbering well over 100 engines each, and valued in the billions, rather than millions, of dollars. GEEL and PWEL both operate large portfolios, which involve more than just their own products. Particular attention is given to engines that are in high demand, such as those used to power the A320 and 737 families. RRRPF is a slight exception, since it only deals with Rolls-Royce engines and those of its joint venture, International Aero Engines (IAE). Shannon Engine Support (SES) and IAE are smaller lessors and deal with just their own engine products.

SES is a wholly-owned subsidiary of CFM International, itself a JV between General Electric (GE) and Snecma Services. SES deals with just CFM56

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engines for short-term support contracts.

The CFM56 alone amounts for nearly a third of all installed engines (both active and parked) on regional, narrowbody and widebody aircraft due to its popularity on the A320 and 737. SES says that it offers a tailored solution to meet the needs of each customer. This includes short-term ad hoc leases, and medium- and long-term operating leases. It also offers guaranteed support and engine pool access programmes.

The SES portfolio also includes a number of engines that belong to others, but that it manages and services. All are used as spare engines. All the CFM engines that were once on the books of GE are now with SES.

IAE, another smaller OEM, also deals with just one engine family, which happens to be one of the most numerous engines: the V2500.

The largest engine lessor amongst the OEMs is GECAS Engine Leasing, with

over 400 engines. GEGAS Engine Leasing offers all types of lease with access to many engines, as well as to those in the SES portfolio. Major customers include most national carriers around the world, including China Eastern, Air France, Delta and British Airways. Although all lease terms are possible, the average length is four years for an operating lease. GECAS Engine Lease also benefits from the GE Engine Services engine shop network.

PWEL has a smaller portfolio than the other main OEMs, with 120-150 engines on the books at any one time, although it does work with other leasing companies as and when the need arises. "Less than 10% of the engines are old technology (when classing CFM56-3 engines as newer technology), and with an even split between engines of narrowbody and widebody aircraft," says Dupont. "Although we do not deal with regional aircraft engines directly, this is

dealt with by Pratt & Whitney Canada. Spare engines account for about 30% of our portfolio, with this very much dictated by the needs of the customer. So this figure could change as, and when, business needs change."

Another heavily customer-driven aspect for PWEL is the lease term, with leases being less than 12 months in many cases. These vary depending on the customer's needs at the time, and currently average 8-10 months. PWEL has a major advantage over other lessors, in that it has a global network of engine shops operated by PW Engine Services. This means maintenance can be an easy addition to the lease. "This has contributed to PWEL having a wide cross-section of customers from small operators to national carriers, on every continent," says Dupont.

RRPF is a JV between Rolls-Royce and GATX, offering short-, medium- and long-term operating leases. "More than 80% of the portfolio is new technology, with all engines being utilised as spare engines," says RRPF's Janagan. Despite the lessor being part of the Rolls-Royce group, it is not aligned with any particular engine shop, which allows RRPF and the customer to use whichever shop is the best option at the time. While other lessors have average lease terms of less than 12 months, according to Janagan, RRPF tends to have average leases of 5-6 years, depending on the market and customer needs. He also adds that OEMs tend to have longer average lease terms, because they are more likely to concentrate on widebody engines. These aircraft are typically on longer leases, so the engine terms will need to be longer as well. "Conversely, the competition," says Janagan, "are more likely to concentrate on narrowbody engines. These aircraft are generally on shorter leases, again having the same effect on the engine terms and up to four years on average."

According to the data received by *Aircraft Commerce*, the five main OEMs have a combined portfolio of over 800 engines, amounting to a book value over \$6 billion. With this representing more than 70% of the main engine lessor value (see table, page 8), it is clear that the OEMs have a distinct advantage and dominance in this market, as well as in engine maintenance. Many major engine shops are directly run by, or are JVs with, OEMs ensuring that the dominance is carried through all levels of an engine's operation.

## Independent lessors

The initial capital cost of new technology, is often seen as a barrier to independent companies in the engine leasing market. Competing with the



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OEM lessors is increasingly difficult since both the financial outlay required and the supply of new engines remains firmly in favour of OEMs. This does not mean that independents cannot have large portfolios of newer engines, but that more often than not, they will deal with older technology to start with.

Long-established independent lessor Willis Lease Finance Corp (WLFC) is, to a certain extent, the exception with a similar portfolio size or value to some of the OEMs. The OEM's portfolios, however, have a higher average engine value. RRPF, for example, has an average engine value of \$7.4 million, while WLFC averages \$5 million per engine.

However, this is at the higher end of the scale for independent lessors, whose average portfolio values tend to be much lower. Kalitta Turbine Leasing is at the bottom end. As well as CFM56 and CF6 engines, Kalitta Turbine Leasing also deals with older JT9s, which push their average engine value down to just \$1.25 million. With newer engines these days costing as much as an aircraft cost 20 years ago, it is not an easy financial decision to make for independents, with the associated risk.

The independent lessors will take full advantage of current engines entering the market as next generation aircraft, such as the A350, 787 and larger regional jets, come on line. This will be in the same

manner as 10 years ago when later-generation stock became available in large quantities and therefore at cheaper rates, as the economic downturn took hold.

Despite the dominance of the OEMs, there are still a number of independent lessors, and this is set to rise. The independents fall into a number of categories, depending on their service and financial background. Some will be backed by banks or financial organisations, some by operators or maintenance organisation, and some will be pure engine lessors.

Financial institutions are some of the few entities that can afford to enter the business of engine leasing, both for the short and the long term. The Bank of America Merrill Lynch, is the parent company of the largest shareholder of GA Telesis. GA Telesis has a large portfolio of over 60 engines, although some are also dealt with by other lessors. The portfolio has a 40:60 split between new and old technology. All lease types are offered, although the average is three years and about 20% of the fleet is used as spares.

TES Aviation is both an engine lessor and a consultancy on engine matters with over 600 managed engines. It is able to offer engine leasing as well as consultancy and management, in part because it is majority-owned by DVB Bank. "The portfolio includes 10-15 serviceable stub-

*Several types of engine lease and engine lessors have evolved. Independent engine shops now offer engine leasing as a means of providing customers with spare engine coverage.*

time engines at any one time," says Rees. "We specialise in the short-term lease market, averaging about 4-6 months. This is usually for shop-visit cover, although some leases are still running two years later. All our engines are mature technology, tending to be 'trading phase' engines."

Unlike many other independents, TES does have agreements with a number of engine shops across Europe and North America, because of the company's main occupation as both an engine management and a consultancy business.

Many engine lessors are connected in some way to an MRO or engine parts supplier, with engine leasing a natural part of their company's progression. AJ Walter is a spare parts company with a global customer base. Royal Aero is also involved in spare parts, maintenance and engine leasing. The portfolio is relatively small, with just 11 engines, although the average value is good, at \$4 million per engine. This portfolio also serves the group's engine pool. There is a good mix of regional, widebody and narrowbody engines, with a ratio of 75:25 towards older technology. Again, Royal Aero is a company that has not aligned itself with any one engine shop, due in part to the diverse location of its customers from Germany to China, as well as an aircraft lease portfolio. Lease terms are generally up to five years, with the average being about 24 months. About half, at any one time, are being used as spare engines.

At the beginning of 2011 AJ Walter put together a lease team and now offers a small number of older engines to customers. Although the portfolio is very small, it is expected to grow as AJ Walter adds some engines from aircraft that it has bought to break down for spares. In addition, it will look at sale-and-leaseback engine deals in the long term. "We currently have a fleet that is old technology, but we want to change this by expanding the portfolio into a variety of different engine types," says Williams, "with a swap once in a while so that we can maintain a good mix. We aim right across the spectrum of clients, with tier 1 clients on long-term leases, as well as short-term needs. We are lucky in that we have the AJ Walter connection. As a result of changing fleet profiles and the effect of this on an airline's spare parts inventory, AJ Walter can be one of the



first companies to be informed in order to deal with stock disposal. This is when the leasing side of the company gets involved. We plan have a pool of about 30 engines, with an 80:20 mix of predominantly narrowbody aircraft. We feel that as these engines operate more cycles per hour, they are more suited to our needs and those of our customers. The difference between the narrowbody fleet and widebody fleet is driven by the life limited parts (LLPs) profile of the engines. The narrowbody fleets are doing short-haul sectors, and reach high cycle lives in a short time. This increase in cycles drives engines in for overhaul earlier, which increases the requirement for lease engines.

“We are independent of any engine shop or OEM and this, we feel, is a real difference for customers,” continues Williams. “We are able to deal with the market changes as they arise, without other market constraints. Plus, not being allied to any particular shop means we are free to use whichever engine shop is best at any one time and situation.”

Delta TechOps, Kalitta Turbine Leasing and Lufthansa Technik (LHT) are all engine lessors that have been born out of aircraft operators. SR Technics’ parent company, Sanad, also aims to enter the engine leasing market in the near future.

This emphasises the advantage of being able to offer a customer not just maintenance, but spare engine cover at the same time. Both Delta TechOps and

LHT offer this service, but just to their MRO customers. As such, they maintain an in-house pool of engines and do not have a large portfolio of engines available to lease.

Kalitta Turbine Leasing is a JV involving Kalitta Air and Turbine Leasing Corp. A majority, 60%, of the portfolio is old technology, with 48 engines currently in the direct control of the company. Potentially all the engines could be used as spares, although both short- and long-term leases are available, with average leases being 12 months. Speciality leases are also available depending on the customer’s needs, with maintenance undertaken at Kalitta Air’s own repair station.

MTU Maintenance, a large, worldwide independent commercial engine MRO service provider, also offers engine leasing. These activities started in 1998 as an engine pool service, branded e.pool®, which has grown into a portfolio of over 40 engines. As far as independent lessors go, the average value per engine is mid-range at just over \$3.75 million per engine. “Besides specific engine types in our current portfolio,” says Stephan Rihm, vice president engine pool services for MTU Maintenance, “we have access to others in order to be able to give full support, with any engines we own being maintained and overhauled in our own facilities in Germany, Canada and China. Our portfolio generally consists of new technology, with 70%

*OEMs have better access to financing and the latest technology engines than independent lessors. Lessors are able to grow their portfolios, however, through purchase-and-leaseback transactions.*

being new and 30% being old.” MTU Maintenance is able to offer a number of different lease terms, and contract forms, since the current portfolio consists of engines that are all available as spare engines. “The aim of our engine pool is to support existing and potential MTU Maintenance customers with flexible short- and long-term solutions as part of a maintenance plan. Average lease terms for short-term contracts are 90 days,” says Rihm. “In order to serve the customer as efficiently as possible, about a third of our portfolio is sourced from other lessors.”

The two largest independent lessors are WLFC and Engine Lease Finance Corporation (ELFC). They are also pure engine lessors, in that they have no other activities, and only offer engine leasing. ELFC, however, has the added advantage of being owned by a bank, with the potential financial backing that this can offer. ELFC and WLFC are different to most other independent lessors, in that they have a large percentage of new technology in their portfolios, and the associated high values.

New engines account for 85% of the WLFC portfolio, and all are used as spare engines. All lease terms are available, although the average term is generally 24 months. The engines managed by WLFC also include some from other lessors. As a large lessor, WLFC has agreements with many of the large engine shops including major airline-connected MROs in North America and Europe, independent MROs in Europe, and PW engine shops.

Although ELFC offers any lease term, from one month, it generally focuses on mid- to long-term leases that have an average term of five years. Customers are numerous, with a heavy slant towards Asian carriers, although US Airways and Virgin Atlantic are also clients. 75% of the portfolio is considered new technology. Of the 400 plus engines, 70% are used as spares and 70 are managed for various partners including GSI, Emerald Leasing and Decaulion Engines Leasing. The latter also uses TES Aviation Ltd to manage engines for its JV, CF6-80 Parts Ltd.

Some airframe lessors, such as AerSale, also deal with engines. A respectable 50-plus engines are available, with lease terms ranging from 30 days to

five years or more. "Just 10% are used as spare engines," says Tom McFarland, vice president of Engine Leasing and Trading of AerSale. "The vast majority, by value, are mid-technology and in-production engines. Despite a low spare engine figure, we specialise in spot engine leasing to customers needing immediate additional spare engine coverage during periods of peak engine removals. Most of our lease terms usually fall within six to 12 months."

With this in mind AerSale lease engines to many large MROs. "Broadly speaking, our customer relationships consist of a mix of passenger and cargo operators, in addition to multiple major engine MROs," says MacFarland.

### Future portfolios

As mentioned already by Dupont, the engine leasing market is very much driven by the aviation market as a whole.

The outlook is for growth with many independent lessors looking to grow their portfolios, in the long term, through sale-and-leaseback. Airlines are increasingly seeing the need to divest themselves of certain assets without stripping the company too far. Therefore, engines are a good option. They will still be needed, but through sale and leaseback the operator gains capital, at the same time as

limiting the risk of hanging on to old stock. As Williams comments however, "this method would need more financing for lessors, since it is capital intensive. It is very much part of AJ Walter's long-term plan." Dupont agrees, saying that while it is not a big part of PWEL's business currently, it could be in the future. This method will be especially important for airlines as they await their new airframes and engines.

As the next generation of aircraft come on line, so too will further advanced engines. The OEM-connected lessors will again be perfectly placed to deal with new technology engines. Slightly older engines are likely to be divested, and be picked up by the smaller independents at the same time as some of these companies make use of airlines' need for sale-and-leasebacks. Dickerson adds: "Our portfolio is constantly changing as we add engines through purchase-and-leasebacks; retire engines through sales and part-outs; and even manage our portfolio through actions such as the Rotor Engine Securitization, which involved a pool of 30 engines. Our size enables us to do larger transactions with multiple engines. We recently completed a purchase-and-leaseback transaction with Singapore Airlines involving four GE90 spare engines, giving the airline the financial flexibility it sought, while

Emirates has done the same with eight GE90s."

With the growth of the OEM lessors, will it be harder for independents to own new engine? Only time will tell. "It will depend on the product type," says Rees. "Historically GE and CFM have had a more liberal approach to allowing third-party lessors to acquire new engines, than Rolls-Royce, for example, and I see nothing to suggest this is changing. Also another factor now coming into play is the prevalence of OEM support and maintenance agreements (TotalCare, MCPH) where airlines are increasingly signing up to long-term care agreements with the engine OEMs. With some products (for example the Trent family) at or near 100% take-up of OEM support, the potential market for spare engines could actually shrink rather than increase. This is food for thought."

It is very likely, therefore, that the newest technology will stay initially with the OEM-connected and very large independent lessors, even more than was seen previously. This is due in part to the increased use of total care packages by OEMs. **AC**

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